CAN
Flash Microcomputer
Programmer

S810-CFW1

Operation Manual

Sunny Giken Inc.

This operation manual is described in accordance with the S810-CFW1 Ver1.10.

CAN Flash Microcomputer Programmer
S810-CFW1

Contents of this manual may be revised without notice.

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1 Outline 3
1.1 Precautions 3
1.2 System Configuration 4
2 Specifications 5
2.1 General Specifications 5
2.2 Power Supply Specifications 5
2.3 Function Specifications 6
2.4 Programmable Devices 6
3 Installation 7
3.1 Installing Software 7
3.2 Uninstalling Software 7
3.3 Installing Acrobat Reader 7
3.4 Installing USB Driver 7
3.5 Disconnecting USB Cable from a PC 10
4 Panel Description 11
4.1 S810-CFW1 Unit 11
5 Instructions for Connection and Standalone Operation 13
5.1 PC Remote CAN Programming Mode 14
5.2 Standalone CAN Programming Mode 17
6 Specifications of CAN Programming Cable 20
6.1 Connector 20
6.2 Pin Assignment 20
7 Connection Circuit Example 21
7.1 Onboard Programming (CAN Input Output Mode) 21
7.2 Network Programming (CPU Rewriting Mode) 27
7.3 Connecting a Probe for a Watch-dog Timer 29
8 Operation by PC Control 30
8.1 Main Programming Screens 30
8.2 Menu Bar 38
8.2.1 Project Menu 38
8.2.2 Edit Menu 39
8.2.3 Help Menu 42
8.3 Error Messages 43
9 List of LED Status 45
10 Updating Firmware 46

1 Outline

1.1 Precautions

Thank you for purchasing our product S810-CFW1, the CAN Flash Microcomputer Programmer.

Please read this operation manual carefully to understand the function of this product for effective and stable operation. Please beware that Sunny Giken Inc. shall have no liability for any damage and/or troubles caused by misuse or careless handling.

1) General Caution

Please follow the precautions mentioned below to avoid hazards such as fire, burns, electric shock, and/or injures.

- Make sure that the power switch of this product is turned OFF and your hands are clean and dry when an AC adapter is plugged in.
- Use this product under proper environment.
- Never place this product up-side-down or lateral side facing to table.
- Handle this product with care to avoid fall and/or physical shock.
- Never take this product apart and/or modify by yourself.

2) Operating Environmental Condition

- Unusable environment
  - Dusty place
  - Place in the presence of corrosive gasses
  - Place exposed to direct sunlight
  - Place surrounded by noise source equipment
  - Place with severe mechanical shock and/or constant mechanical vibration
- Ambient temperature 0°C to +40°C Humidity : below 80% (non condensing)
- Prevention of electrostatic is recommended in operating this product and devices.

3) Storage

- Place this product into the packing box in which the product was delivered when you purchased. Store it at shaded place with the ambient temperature of -10°C to +40°C and below 80% of humidity (non condensing) for long term storage.

4) Transportation

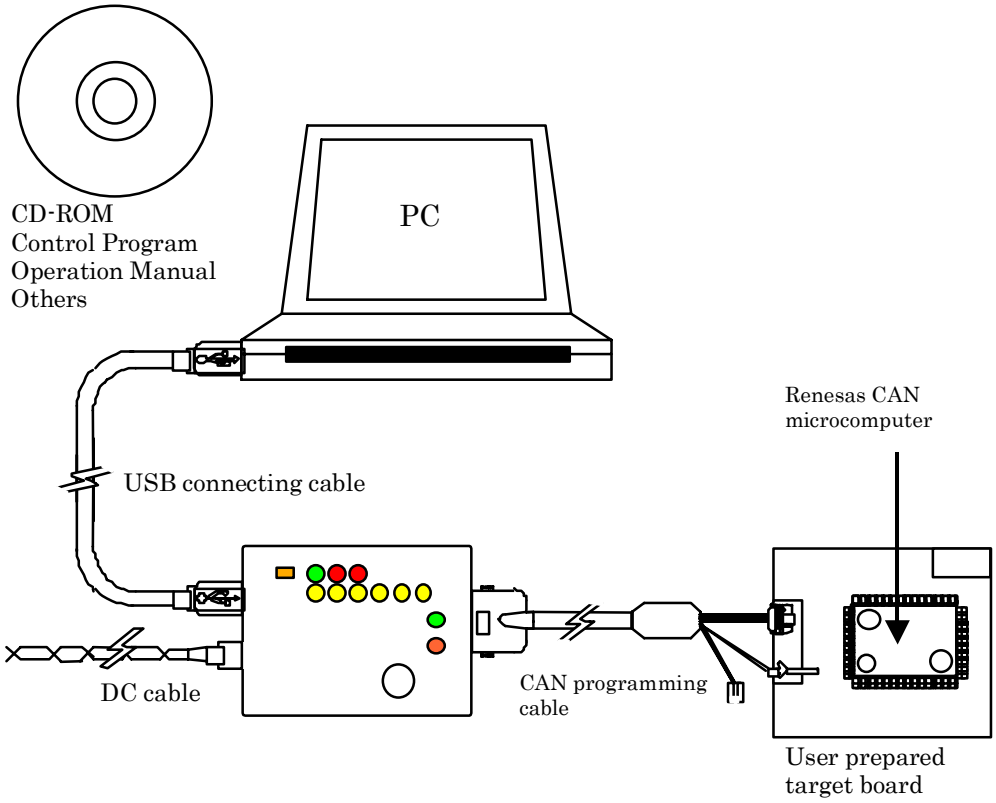
- In case the product is needed to be relocated, use the packing box in which the product was delivered when you purchased.

5) Cleaning

- Wipe the product with soft and clean fabric. Do not use any sort of organic solvent such as benzine that may cause deterioration of this product.

1.2 System Configuration

The entire system configuration of the CAN Flash Microcomputer Programmer (hereinafter called "CFW1") is illustrated below.



* AC adapter is not included as part of the product.
* See "5. Setting Up" for details of connection.

2 Specifications

2.1 General Specifications

Main unit of the CFW1

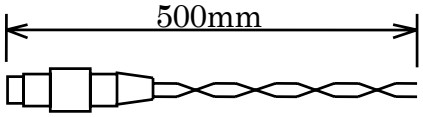
Operating environment	Ambient temperature: 0°C to 40°C Humidity: below 80% (non condensing)
Storage environment	Ambient temperature: -10°C to +40°C
External dimensions	Approximately 85 (W) x 60.5 (D) x 18 (H) mm (Projection not included)
Weight	Approximately 75g (only the main unit)

2.2 Power Supply Specifications

Using DC Cable

Power supply	DC +12V
Power consumption	200mA maximum, 50mA average

The polarity of this DC cable is illustrated below.



Wire color RED:DC+12V
BLACK:GND

Using CAN Cable

Power supply	DC +5V ±5%
Power consumption	300mA maximum, 100mA average

Using USB Cable

Power supply	DC +5V ±5%
Power consumption	500mA maximum, 100mA average

* DC +5V±5%, maximum of 500mA of power supply is needed to start CFW1. When using USB cable, use PC or USB hub that bears minimum of 4.75V, 500mA of power supply.

2.3 Function Specifications

Programmable MCU	Renesas CAN Microcomputers See “cfw1deve.pdf” in the attached CD-ROM.
Operation Mode	CAN programming mode
Program Mode	PC remote CAN programming
	Standalone CAN programming
PC control Software	All the operation can be achieved from your PC with easy-to-operate GUI(Graphic User Interface). Applicable to Windows98/2000/Me/XP.
Interface	USB (Full Speed: 12Mbps)

2.4 Programmable Devices

Programmable devices are the Renesas CAN Microcomputers. Some of the devices are, however, still under evaluation or not yet programmable. Refer to the attached file “Programmable Device List” in the attached CD-ROM.

For the latest information, contact Sunny Giken Inc..

3 Installation

3.1 Installing Software

Start “Setup.exe” in the S810-CFW1 folder in the attached CD-ROM. Follow the messages of the installer.

3.2 Uninstalling Software

Execute “Add/Remove Programs” in the control panel and select “S810-CFW1” in the “Change/Remove”. Press the [Change/Remove] button to execute uninstallation.

3.3 Installing Acrobat Reader

You need Acrobat Reader in order to refer to the “Manual” of the “Help”. If Acrobat Reader is not installed on your PC, start “AR405ENG.EXE” in ACROBAT folder in the attached CD-ROM.

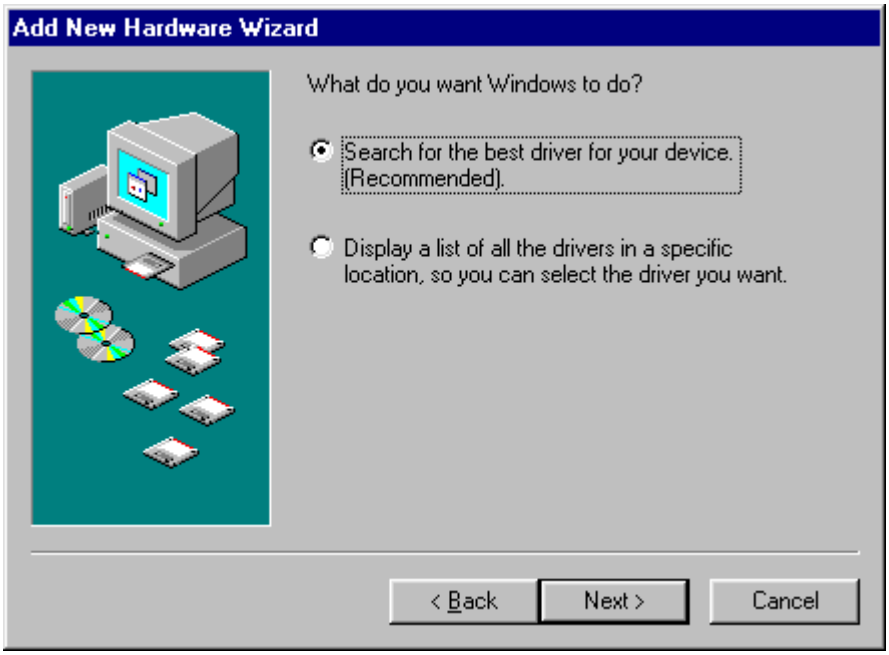
3.4 Installing USB Driver

When CFW1 is connected by USB for the first time, Windows automatically inspects the new hardware and creates driver information database. The procedure for installing USB Driver is described below:

i. “Add New Hardware Wizard” Dialog will be displayed. Press [Next].

Add New Hardware Wizard
This wizard searches for new drivers for:
S810-CFW1
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

ii. Select “Search for the best driver for your device. (Recommended)” and press [Next]


Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended).
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

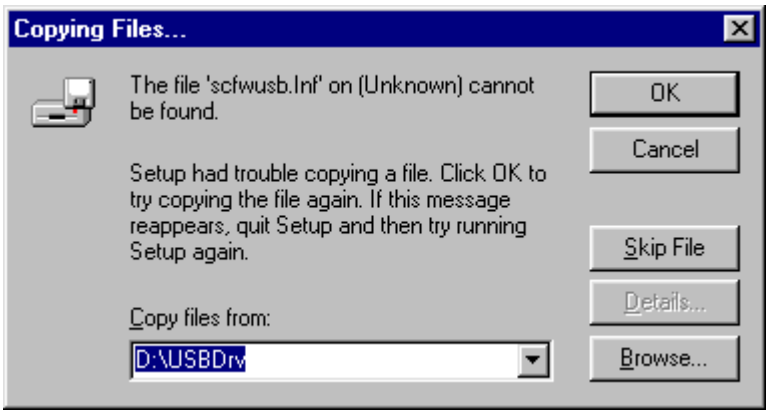
iii. Specify “USBDrv” folder in the attached CD-ROM for areas to be inspected.

Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
D:\USBDrv
Browse...
< Back
Next >
Cancel

iv. “Sunny S810-CFW1 USB” will be viewed. Press [Next].

Add New Hardware Wizard
Windows driver file search for the device:
Sunny S810-CFW1 USB
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
D:\USBDRV\SCFWUSB.INF
< Back
Next >
Cancel

v. Although the next dialog will appear because the area to be inspected is the CD-ROM folder, press the [OK] button.


Copying Files...
The file 'scfwusb.Inf' on (Unknown) cannot be found.
Setup had trouble copying a file. Click OK to try copying the file again. If this message reappears, quit Setup and then try running Setup again.
Copy files from:
D:\USBDrv
OK
Cancel
Skip File
Details...
Browse...

vi. The driver files will be automatically copied and then, installation will be completed.

3.5 Disconnecting USB Cable from a PC

Do not disconnect USB cable from a PC while the control program is being activated.
USB cable can be disconnected anytime as long as the control program is not being activated.

4 Panel Description

4.1 S810-CFW1 Unit

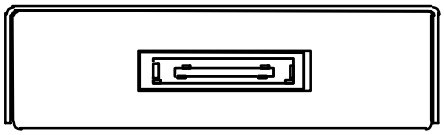
External views of CFW1 are shown and its parts such as switches, LEDs, and connectors are also described below.

- Top view

Switch/LED		Function
Switch	START	Executes command responding to LED which is turned on when the power supply switch is turned on.
LED	POWER	Turns ON when the power supply switch is turned on.
	PASS	Turns ON when CAN programming is successful.
	ID ERR	Turns ON when result of CAN programming is ID_ERR.
	FAIL	Turns ON when CAN programming is failed.
	E/P/V	Turns ON when E/P/V command is selected in the control program.
	BLANK	Turns ON when BLANK command is selected in the control program.
	ERASE	Turns ON when ERASE command is selected in the control program.
	E/P	Turns ON when E/P/ command is selected in the control program.
	VERIFY	Turns ON when VERIFY command is selected in the control program.
	READ	Turns ON when READ command is selected in the control program.
	Tx	Turns ON when CAN frame is sent from CFW1.
	Rx	Turns ON when CAN frame is received from the target.

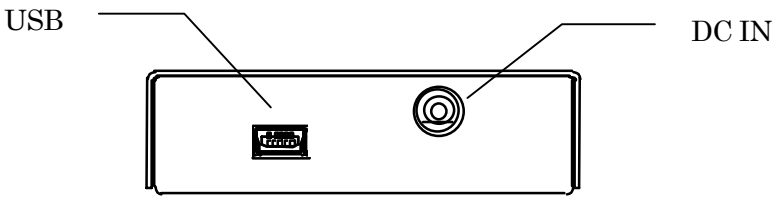
For further information on LED status, see “10. List of LED Status”.

● Right-hand side view



Connector	Function
TARGET	Connector for CAN programming cable

● Left-hand side view



Connector	Function
USB	Connector for USB cable (mini-B Plug)
DC IN	Connector for DC cable.

5 Instructions for Connection and Standalone Operation

Connection instructions are illustrated below.
There are mainly two types of connection.

-PC Remote CAN Programming Mode

Connecting PC to CFW1 with USB enables CFW1 to achieve PC Remote CAN Programming Mode. CAN programming is executed by using CFW1 control program in PC Remote CAN Programming Mode. For directions for using CFW1 control program, see "8. Operation by PC Control Program".

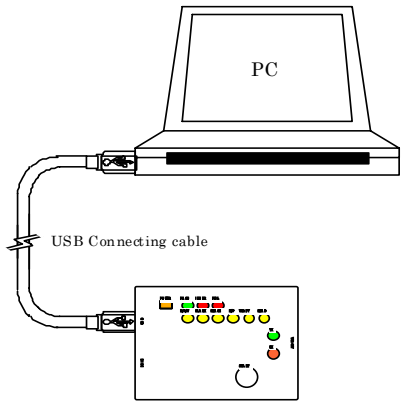
-Standalone CAN Programming Mode

Using CFW1 alone without connecting PC to CFW1 enables it to achieve Standalone CAN Programming Mode. The main unit of CFW1 can automatically save set conditions and data by control program. Therefore, CFW1 can achieve CAN programming by itself as long as there is no change in the data. Pressing START switch will complete the operation. Since advanced setting is not necessary, it is easy to program.

In addition, LED of the main unit of CFW1 indicates set execution state.
For further information on the control program, see "8. Operation by PC Control Program".

<Instructions for Data Setting>

(1) Connect PC to CFW1 by using USB cable and start PC control program.
(2) Select MCU name and set baudrate and others.
(3) Load data for programming
(4) Set lockbits and pulse output if necessary.
(5) Check command you would like to execute. (Erase/Program/Verify, Blank, and others)
(6) Select "Project", then "Exit" in the menu bar and close the control program



<Instructions for CAN Programming>

(1) Connect CFW1 to a target board by following the optimum way for the target board and turn it on.
(2) Press START switch to execute processing which is selected in Action.*1
(3) When the processing is completed, LED of the main unit will output the result.
(4) Turn it off and disconnect the CFW1 from the target board.

Start from the first step every time if you would like to repeat the operation.

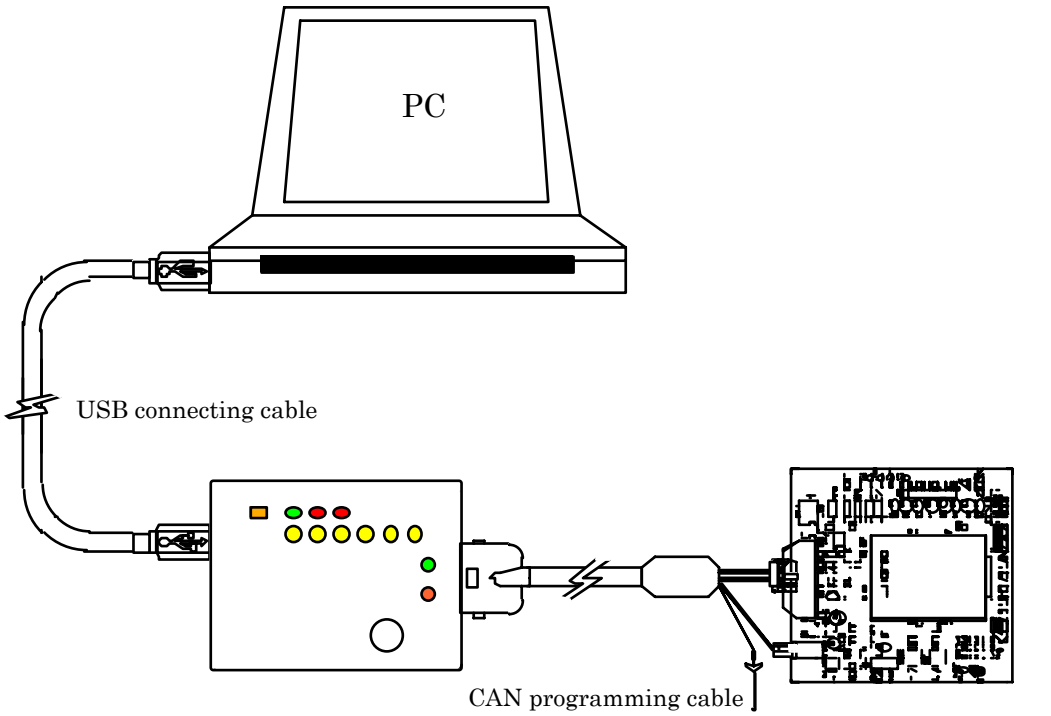
*1 When loading programming data from internal memory, contents of the memory are checked whether they are kept safely (Checksum check). If not, FAIL LED will flash. If this happens, press START switch to stop LED flashing. Then, reload the data after formatting the main unit of the CFW1 by using CFW1 control program.

5.1 PC Remote CAN Programming Mode

In PC Remote CAN Programming Mode, there are mainly three connecting methods depending on the conditions.

i. Remote Connection 1

In this method, power needed for a target board is supplied from a CFW1 side. A figure and procedures for the connection are shown below. Note that the connection method shown below is applicable to our products, S810-CHX3, CHX4. See "Remote Connection 2" in the next page, if you use a board produced by users.



<Procedures>

(1) Connect PC and CFW1 by using USB cable.

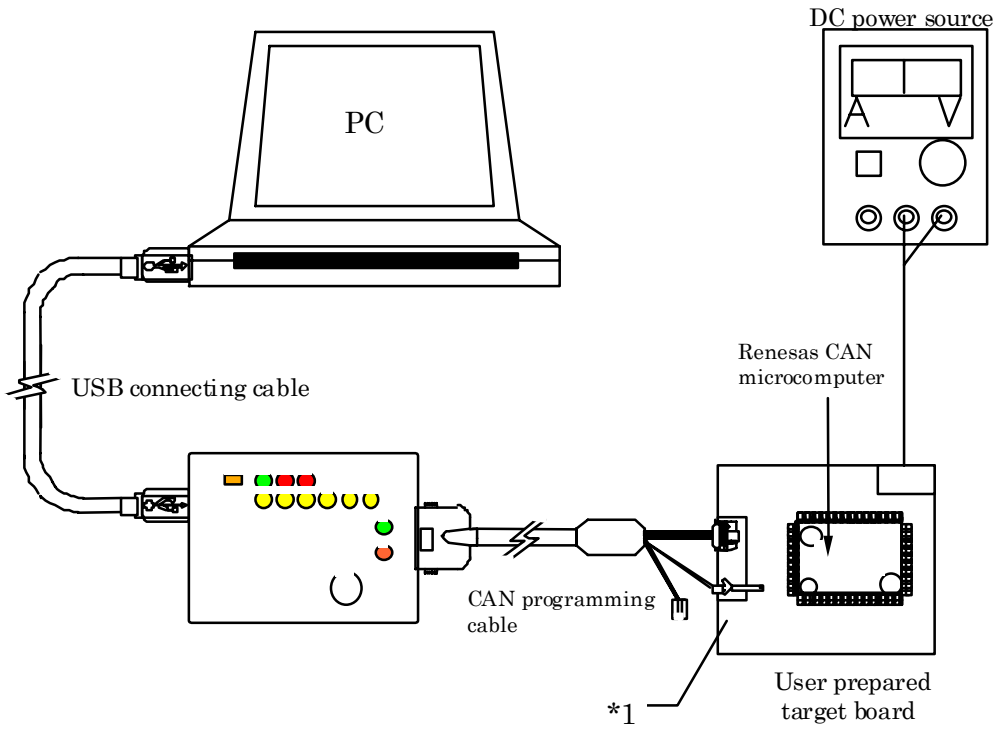
(2) Attach CAN programming cable to the main unit of CFW1.

(3) Connect CAN programming cable and a target board (S810-CHX3, CHX4). Connect the power connector of the CAN programming cable and 10 pin connector to the target board. Note that a probe for a watch dog timer is not to be used since our products, S810-CHX3, CHX4, have no watch dog timer function.

*1 S810-CHX3: Evaluation board for CAN
Mounted with CAN transceiver to enable evaluation of CAN communication.
S810-CHX4: IC socket type CAN writing board
Enables programming flash micro-computers before they are mounted in the board.

ii. Remote Connection 2

In this method, power needed for a target board is supplied by DC power source. This method is, therefore, applicable when PC remote CAN programming on a target board prepared by users. A figure and procedures are shown below.



<Procedures>

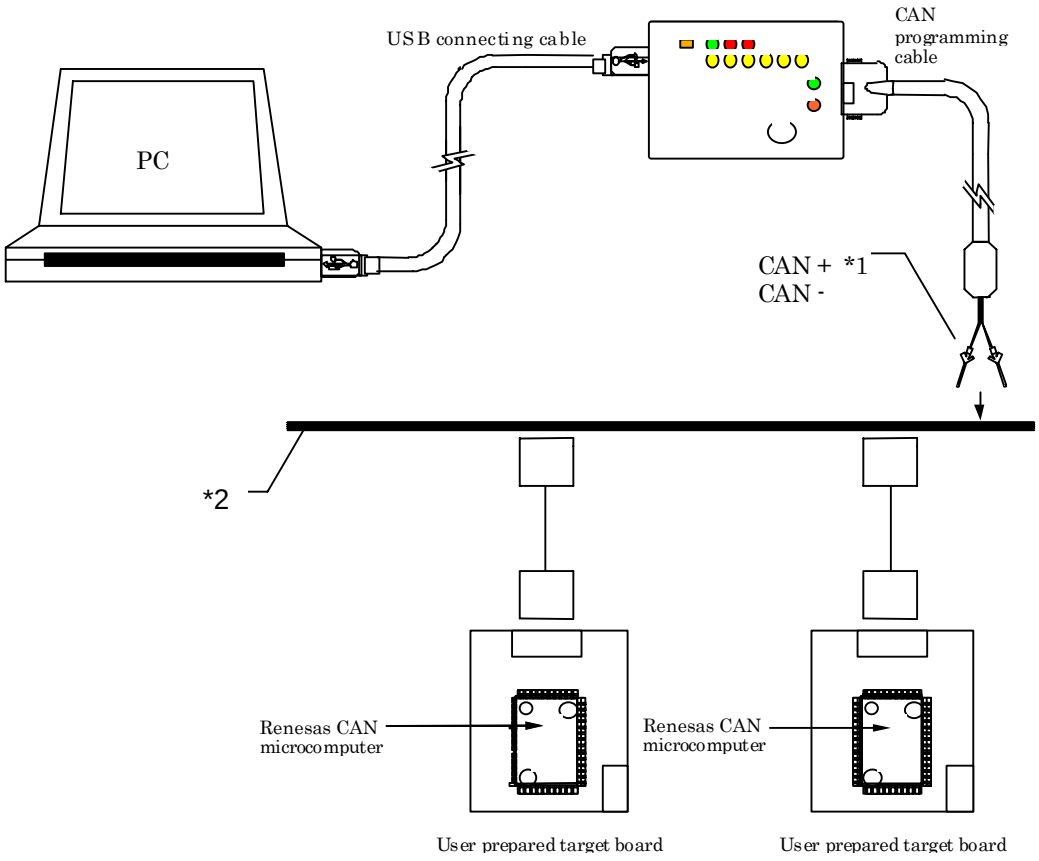
(1) Connect PC and CFW1 by using USB cable.
(2) Attach CAN programming cable to the main unit of CFW1.
(3) Connect the 10 pin connector of the CAN programming cable to the target board. Do not connect the power connector since it may cause damage.
(4) Connect DC power source and a target board. Then, turn it on.

*1: If a watch dog signal is needed to start MCU, a probe for a watch dog timer needs to be connected.

Note)See "7.1 When On-board Programming (CAN Input Output Mode)" for circuit examples when using target boards produced by users.

iii. Remote Connection 3

In this method, power needed for a target board is supplied by power source in network. This method, therefore, is applicable when PC remote programming on target boards in CAN network. A figure and procedures are shown below.



<Procedures>

(1) Connect PC and CFW1 by using USB cable.
(2) Attach CAN programming cable to the main unit of CFW1.
(3) Connect CAN+ and CAN- in CAN network and CAN+ and CAN- pins of CAN programming cable.

*1: Connector pins should be prepared by users. See "6.Specifications of CAN Programming Cable" for pin assignment of CAN programming cable.

*2: This method provides that CAN network is turned on. If it is not turned on, turn it on first, and then follow the procedures described above.

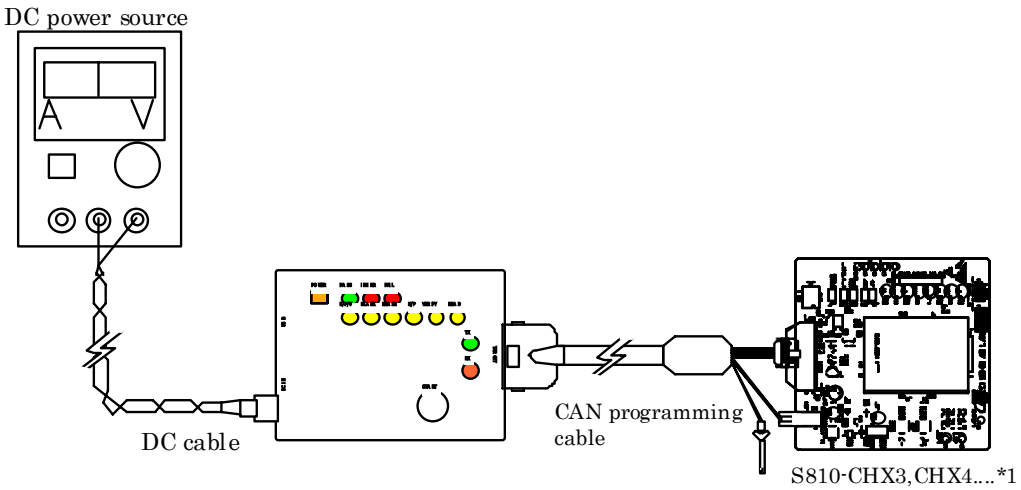
Note) See "7.2 When Network Programming (CPU Rewriting Mode)" for circuit examples when using target boards produced by users.

5.2 Standalone CAN Programming Mode

In Standalone CAN Programming Mode, there are mainly four connecting methods depending on the conditions.

i. Standalone Connection 1

In this method, power needed for a target board is supplied from a CFW1 side. A figure and procedures for the connection are shown below. Note that the connection method shown below is applicable to our products, S810-CHX3, CHX4. See "Standalone Connection 2" in the next page, if you use a board produced by users.



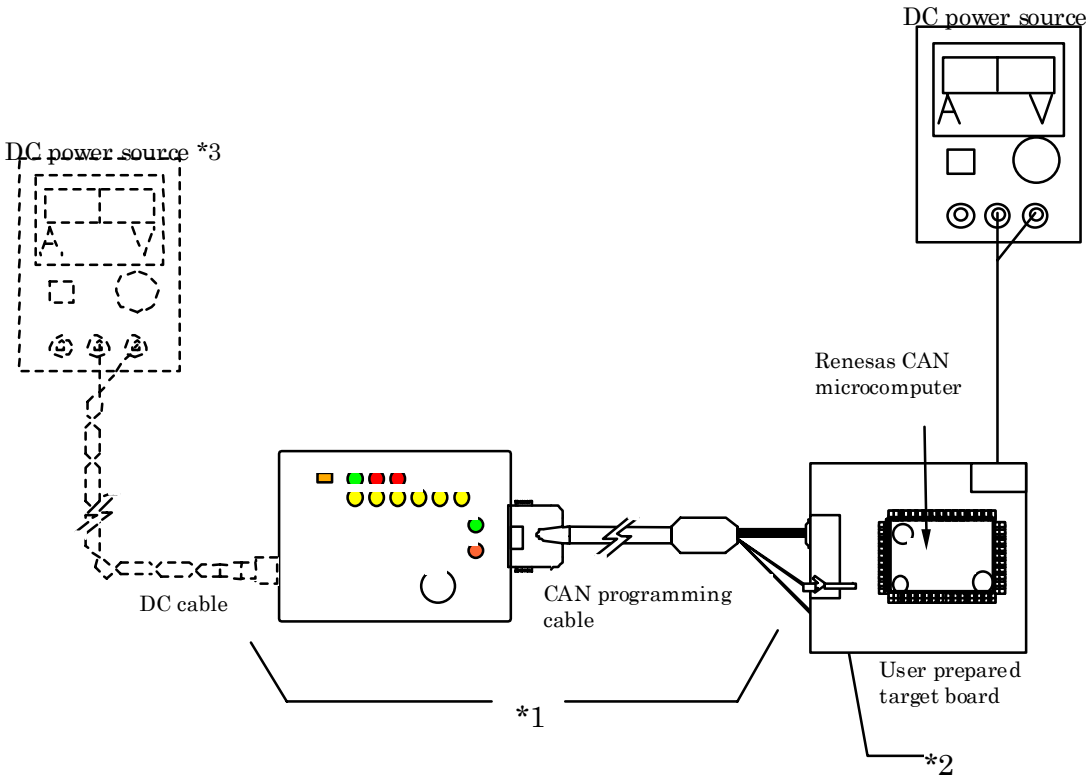
<Procedures>

(1) Connect the main unit of CFW1 and CAN programming cable.
(2) Connect the CAN programming cable and a target board (S810-CHX3, CHX4). Connect the power connector of the CAN programming cable and the 10 pin connector to the target board. Note that the probe for a watch-dog timer is not to be used since our products, S810-CHX3, CHX4, do not have a watch-dog function.
(3) Connect DC cable and the main unit of CFW1 and then turn it on.
(4) Connect the DC cable and the main unit of CFW1. Supply 12V of power from the DC cable and turn it on.

*1 S810-CHX3: Evaluation board for CAN
Mounts CAN transceiver to enable evaluation of CAN communication.
S810-CHX4: IC socket type CAN writing board
Enables programming a flash microcomputer before that is mounted on a board.

ii. Standalone Connection 2

In this method, power needed for CFW1 and a target board is supplied by DC power source for a target board. This method is, therefore, applicable when standalone CAN programming on a target board prepared by users. A figure and procedures are shown below.



<Procedures>

(1) Connect the main unit of CFW1 and CAN programming cable.
(2) Connect the CAN programming cable and a target board. Connect a power connector of the CAN programming cable and the 10 pin connector to the target board.
(3) Connect the target board and DC power source and turn it on.

*1: The power for CFW1 is supplied through Vcc pins by a target board prepared by users. Connect a target directly to the Vcc pins. However, if the power capacity of the target board is not enough for CFW1, do not connect the target board and the power connector. Connect a DC cable to CFW1 instead. (The maximum power consumption of the CFW1 is 300mA.) Note that Vcc pins for a target board should be used between 5V±5%. Do not supply power to CFW1 by DC power source on a target board side and one connected by a DC cable at the same time. Power should be supplied from only one side.

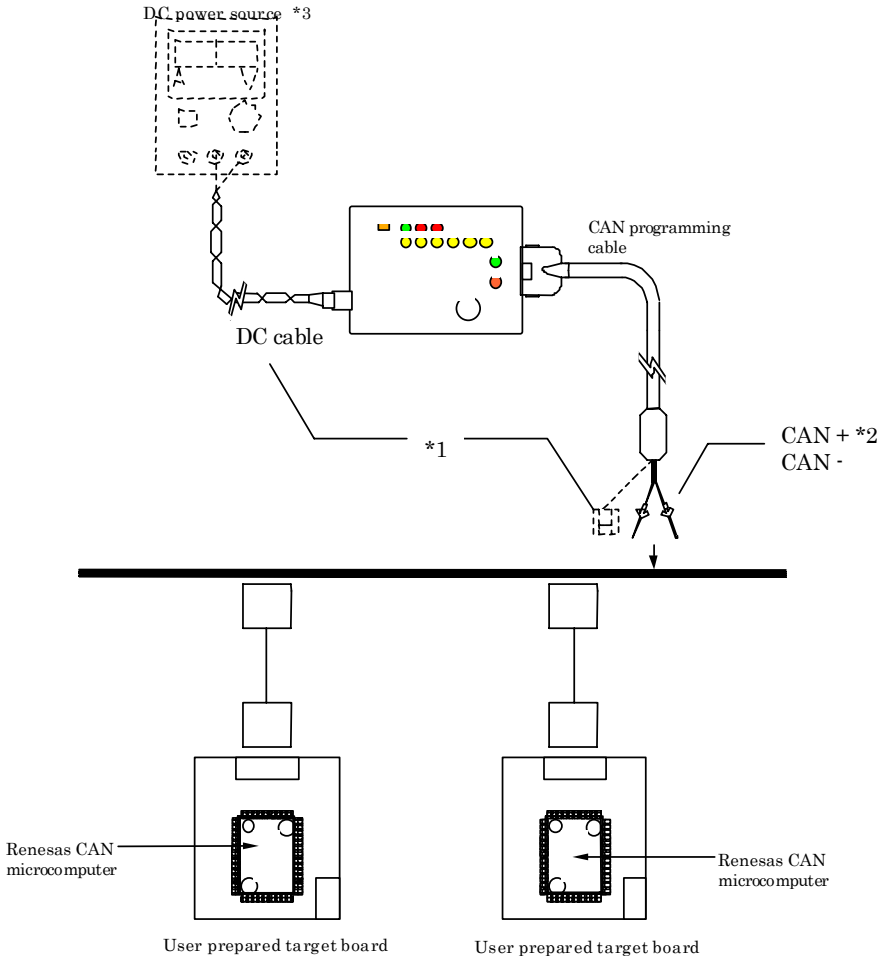
*2: In case that a watch-dog signals are needed to start MCU, a probe for a watch-dog output also needs to be connected.

*3: If power needs to be supplied through a DC cable, DC power source should be prepared by users. 12V of power should be supplied.

Note) See "7.1 When Onboard Programming (CAN Input Output Mode)" for circuit examples when using target boards produced by users.

iii. Standalone Connection 3

This method is applicable when standalone CAN programming on a target board in CAN network. A figure and procedures are shown below.



<Procedures>

(1) Connect DC cable and the main unit of CFW1 and then turn it on.
(2) Connect CAN programming cable to the main unit of CFW1.
(3) Connect CAN+ and CAN− pins in CAN network and CAN+ and CAN− pins of the CAN programming cable.

*1: If ±5V±5% of DC power can be supplied from the signal line on CAN network through CAN programming cable, CAN programming can be operated without connecting a DC power source. Do not supply power to CFW1 by DC power source on a target board side and one connected by a DC cable at the same time. Power should be supplied from only one side.

*2: Connector pins mentioned above should be prepared by users. See "6. Specifications of CAN Programming Cable" for details of the pin assignment of the CAN programming cable.

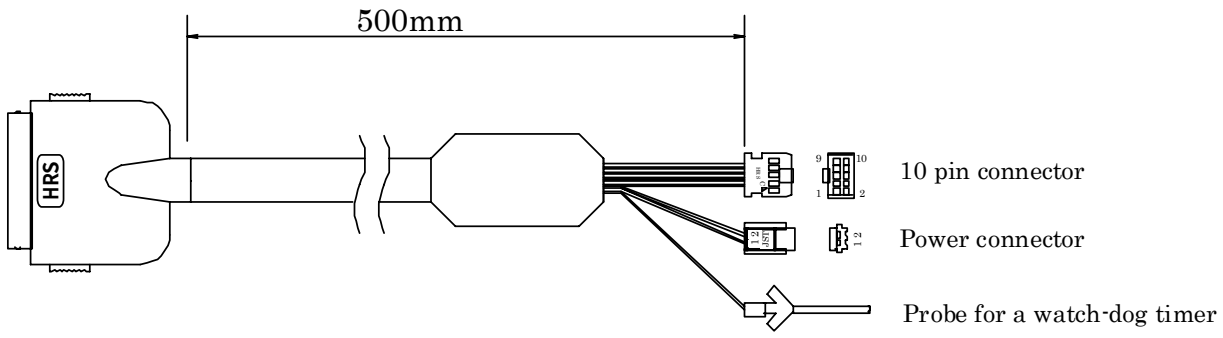
*3: If power needs to be supplied through a DC cable, DC power source should be prepared by users. 12V of power should be supplied.

Note) See "7.2 When Network Programming (CPU Rewriting Mode)" for circuit examples when using target boards produced by users.

6 Specifications of CAN Programming Cable

6.1 Connector

An external view of the CAN programming cable (S810-CFW1) is shown below. Note that this cable is ISO11898 compliant.See"6.2 Pin Assignment" for details of pin assignment for each connector.



6.2 Pin Assignment

(1) 10 pin connector

Pin No.	Signal Name	Description	Direction
1	Vcc MON	Vcc Monitor	Input
2	SEL1	SEL1 signal output for CAN programming	Output
3	SEL2	SEL2 signal output for CAN programming	Output
4	CAN-	Receiving frame signal input for CAN programming	-
5	CE*	CE signal output for CAN programming	Output
6	EPM*	EPM signal output for CAN programming	Output
7	GND	Signal ground	-
8	RESET*	RESET signal output for CAN programming	Output
9	CNVss	CNVss (Vpp) signal output for CAN programming	Output
10	CAN+	Send frame for CAN programming	-

(2) Power connector

Pin No.	Signal Name	Description	Direction
1	Vcc	Vcc Input Output	*
2	GND	Signal ground	-

*The direction can be different depending on a connection method.

(3) Probe for a watch-dog timer

Pin No.	Signal Name	Description	Direction
-	WDT	Pulse signal output for a watch-dog timer	Output

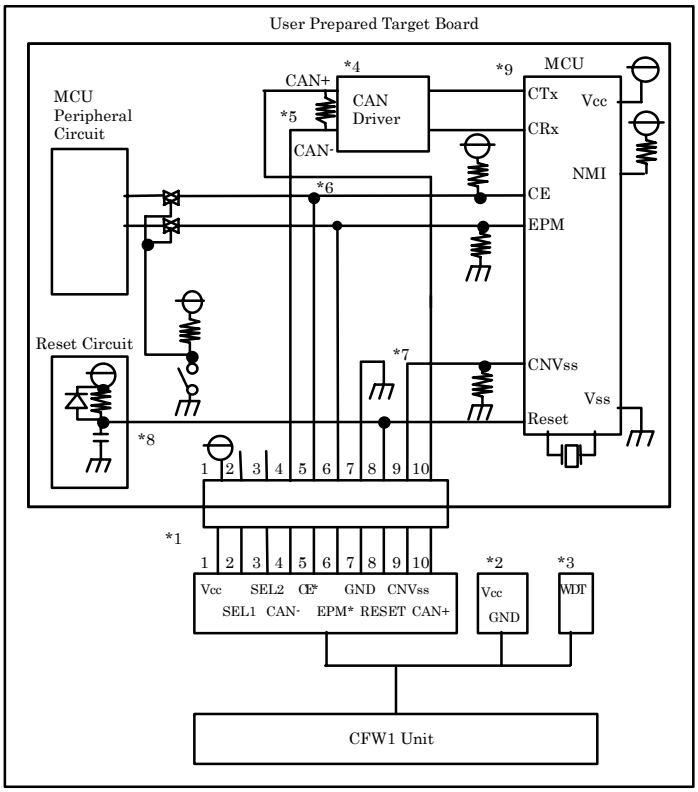
* The input output level for the CAN programming cable should be between 5V±5%.

7 Connection Circuit Example

7.1 Onboard Programming (CAN Input Output Mode)

Circuit examples for onboard programming under user oriented MCU circuit design are shown below:

(1) M16C/6NA,6NB



*1. Leave No.2 and 3 pins of the 10 pin connectors unconnected.

*2. The power connector can be connected or unconnected according to the conditions for CAN programming. (See "5. Instructions for Connection and Standalone Operation" for details of the power connector.)

*3. In case that watch-dog signals are needed to start the MCU, a probe for a watch-dog output also needs to be connected.

*4. Connect ISO11898 compliant CAN driver to CTx and CRx of MCU.

*5. Attach a terminating resistance to CAN+,– of the CAN bus.

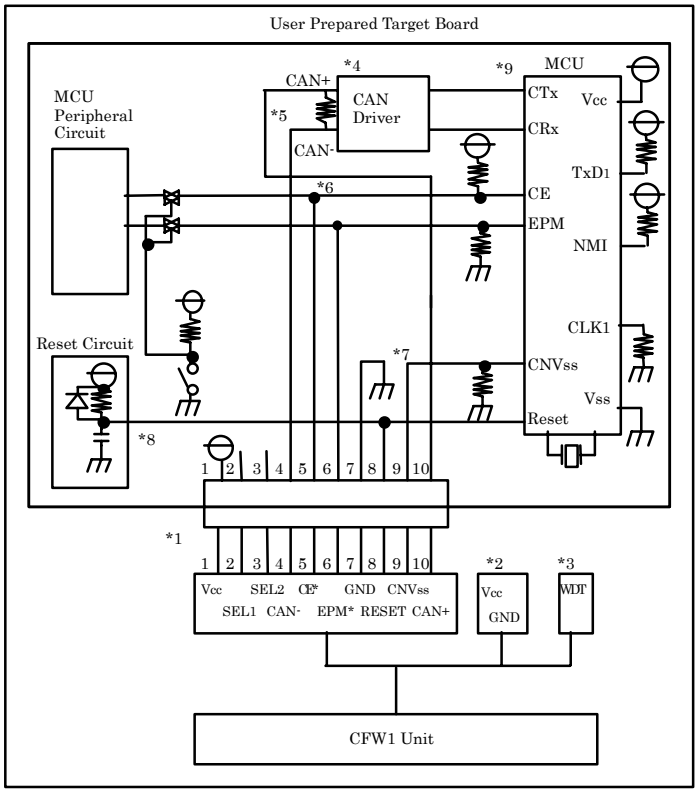
*6. Isolate CE and EPM pins from the MCU peripheral circuit, in case the jumper, analog switch, three state, etc. are built in, when onboard programming. Isolation can be omitted when those signal statuses are output from the MCU peripheral circuit. Resistance should be 4.7KΩ or over when pull-up is achieved to these signals. When pull-up is achieved to CE pin, and pull-down is achieved to EPM pin, no connection to CE and EPM of CFW1 is required and the isolation alone can be conducted. In case that these pins are not being used in the circuit, it is also possible to fix CE and EPM pins to H and L levels directly on the board respectively.

*7. Connect the MCU CNVss pin to the CNVss pin of the CFW1 unit by achieving "pull up/down" with resistance of 10KΩ. In case that it is defined to H level by switching the jumper of the CNVss pin, no connection to the CNVss pin of CFW1 is not required.

*8. Connect the reset pin of the user target board MCU to the RESET pin of the CFW1 directly when the reset circuit of the user target board is "open collector output", "CR delay circuit", or constant current load circuit is less than dozens of μA.

*9. See "Renesas Microcomputer Hardware Manuals" for details of onboard programming (CAN Input Output Mode) of each device.

(2) M16C/6N4, 6N5, 6NK, 6NL, 6NM, 6NN group



*1. Leave No.2 and 3 pins of the 10 pin connectors unconnected.

*2. The power connector can be connected or unconnected according to the conditions for CAN programming. (See "5. Instructions for Connection and Standalone Operation" for details of the power connector.)

*3. In case that watch-dog signals are needed to start the MCU, a probe for a watch-dog output also needs to be connected.

*4. Connect ISO11898 compliant CAN driver to CTx and CRx of MCU.

*5. Attach a terminating resistance to CAN+,– of the CAN bus.

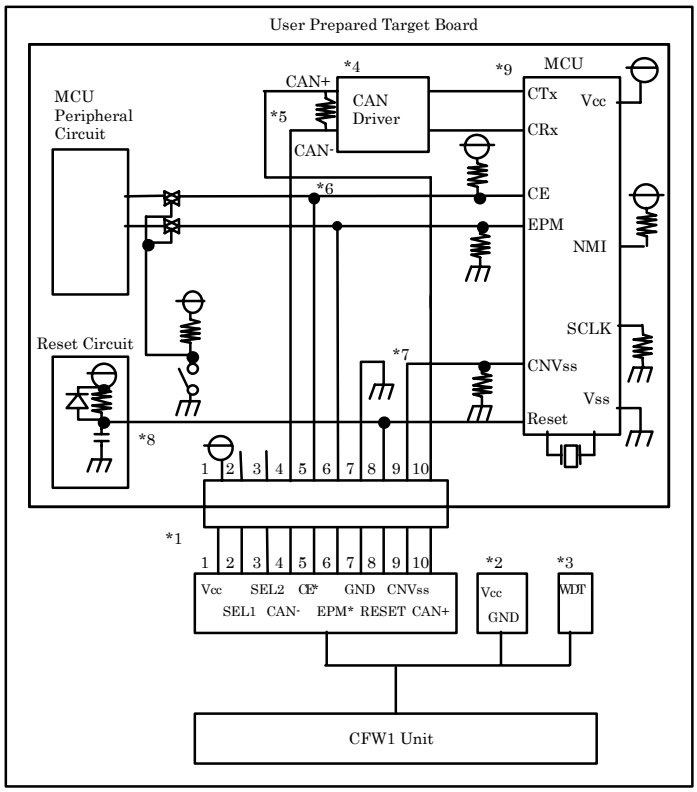
*6. Isolate CE and EPM pins from the MCU peripheral circuit, in case the jumper, analog switch, three state, etc. are built in, when onboard programming. Isolation can be omitted when those signal statuses are output from the MCU peripheral circuit. Resistance should be 4.7KΩ or over when pull-up is achieved to these signals. When pull-up is achieved to CE pin, and pull-down is achieved to EPM pin, no connection to CE and EPM of CFW1 is required and the isolation alone can be conducted. In case that these pins are not being used in the circuit, it is also possible to fix CE and EPM pins to H and L levels directly on the board respectively.

*7. Connect the MCU CNVss pin to the CNVss pin of the CFW1 unit by achieving "pull up/down" with resistance of 10KΩ. In case that it is defined to H level by switching the jumper of the CNVss pin, no connection to the CNVss pin of CFW1 is not required.

*8. Connect the reset pin of the user target board MCU to the RESET pin of the CFW1 directly when the reset circuit of the user target board is "open collector output", "CR delay circuit", or constant current load circuit is less than dozens of μA.

*9. See "Renesas Microcomputer Hardware Manuals" for details of onboard programming (CAN Input Output Mode) of each device.

(3) M32C/84,85 group



*1. Leave No.2 and 3 pins of the 10 pin connectors unconnected.

*2. The power connector can be connected or unconnected according to the conditions for CAN programming. (See "5. Instructions for Connection and Standalone Operation" for details of the power connector.)

*3. In case that a watch-dog signals are needed to start MCU, a probe for a watch-dog output also needs to be connected.

*4. Connect ISO11898 compliant CAN driver to CTx, CRx of MCU.

*5. Attach a terminating resistance to CAN+,– of the CAN bus.

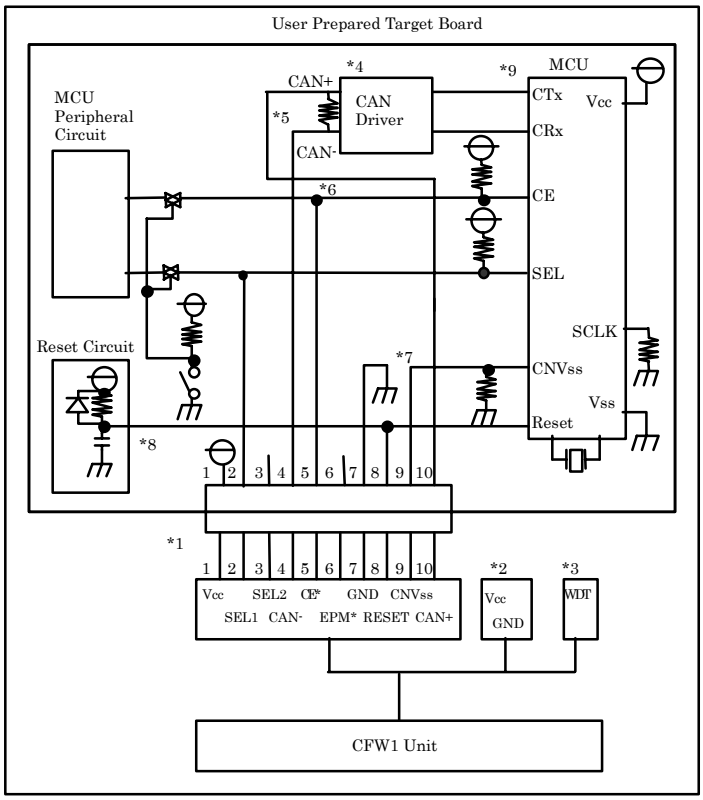
*6. Isolate CE and EPM pins from the MCU peripheral circuit in case the jumper, analog switch, three state, etc. are built in, when onboard programming. Isolation can be omitted when those signal statuses are output from the MCU peripheral circuit. Resistance should be 4.7KΩ or over when pull-up is achieved to these signals. When pull-up is achieved to CE and EPM pins, no connection to CE and EPM of CFW1 is required and the isolation alone can be conducted. In case that these pins are not being used in the circuit, it is also possible to fix CE and EPM pins to H and L levels directly on the board respectively.

*7. Connect the MCU CNVss pin to the CNVss pin of the CFW1 unit by achieving "pull up/down" with resistance of 10KΩ. In case that it is defined to H level by switching the jumper of the CNVss pin, no connection to the CNVss pin of CFW1 is not required.

*8. Connect the reset pin of the user target board MCU to the RESET pin of the CFW1 directly when the reset circuit of the user target board is "open collector output", "CR delay circuit", or constant current load circuit is less than dozens of μA.

*9. See "Renesas Microcomputer Hardware Manuals" for details of onboard programming (CAN Input Output Mode) of each device.

(4) M16C/1N group



*1. Leave No.3 and 6 pins of the 10 pin connectors unconnected.

*2. The power connector can be connected or unconnected according to the conditions for CAN programming. (See "5. Instructions for Connection and Standalone Operation" for details of the power connector.)

*3. In case that a watch-dog signals are needed to start MCU, a probe for a watch-dog output also needs to be connected.

*4. Connect ISO11898 compliant CAN driver to CTx, CRx of MCU.

*5. Attach a terminating resistance to CAN+,− of the CAN bus.

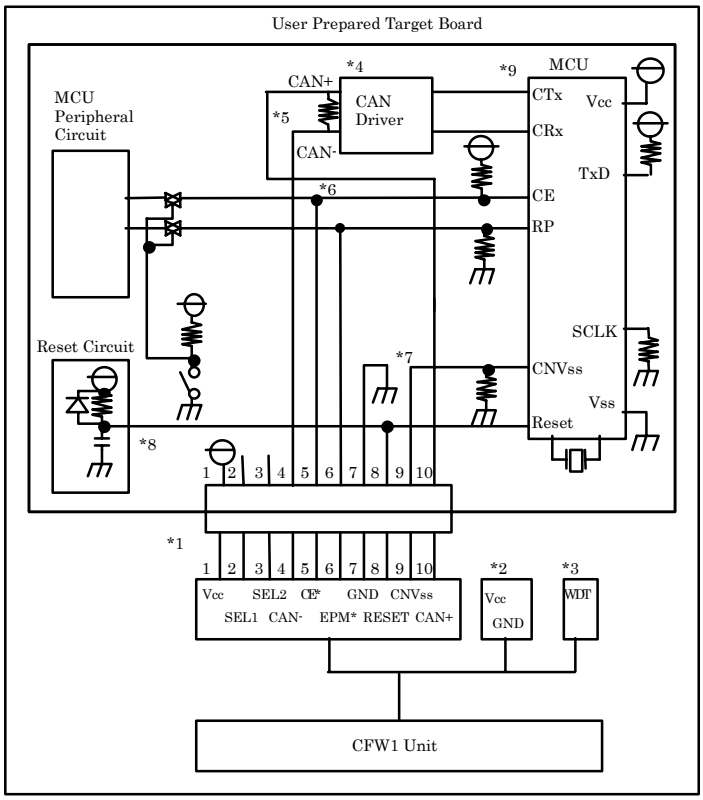
*6. Isolate CE and SEL pins from the MCU peripheral circuit in case the jumper, analog switch, three state, etc. are built in, when onboard programming. Isolation can be omitted when those signal statuses are output from the MCU peripheral circuit. Resistance should be 4.7KΩ or over when pull-up is achieved to these signals. When pull-up is achieved to CE and SEL pins, no connection to CE and SEL1 of CFW1 is required and the isolation alone can be conducted. In case that these pins are not being used in the circuit, it is also possible to fix CE and SEL pins to H and L levels directly on the board respectively.

*7. Connect the MCU CNVss pin to the CNVss pin of the CFW1 unit by achieving "pull up/down" with resistance of 10KΩ. In case that it is defined to H level by switching the jumper of the CNVss pin, no connection to the CNVss pin of CFW1 is not required.

*8. Connect the reset pin of the user target board MCU to the RESET pin of the CFW1 directly when the reset circuit of the user target board is "open collector output", "CR delay circuit", or constant current load circuit is less than dozens of μA.

*9. See "Renesas Microcomputer Hardware Manuals" for details of onboard programming (CAN Input Output Mode) of each device.

(5) M16C/29 group



*1. Leave No.2 and 3 pins of the 10 pin connectors unconnected.

*2. The power connector can be connected or unconnected according to the conditions for CAN programming. (See "5. Instructions for Connection and Standalone Operation" for details of the power connector.)

*3. In case that a watch-dog signals are needed to start MCU, a probe for a watch-dog output also needs to be connected.

*4. Connect ISO11898 compliant CAN driver to CTx, CRx of MCU.

*5. Attach a terminating resistance to CAN+,− of the CAN bus.

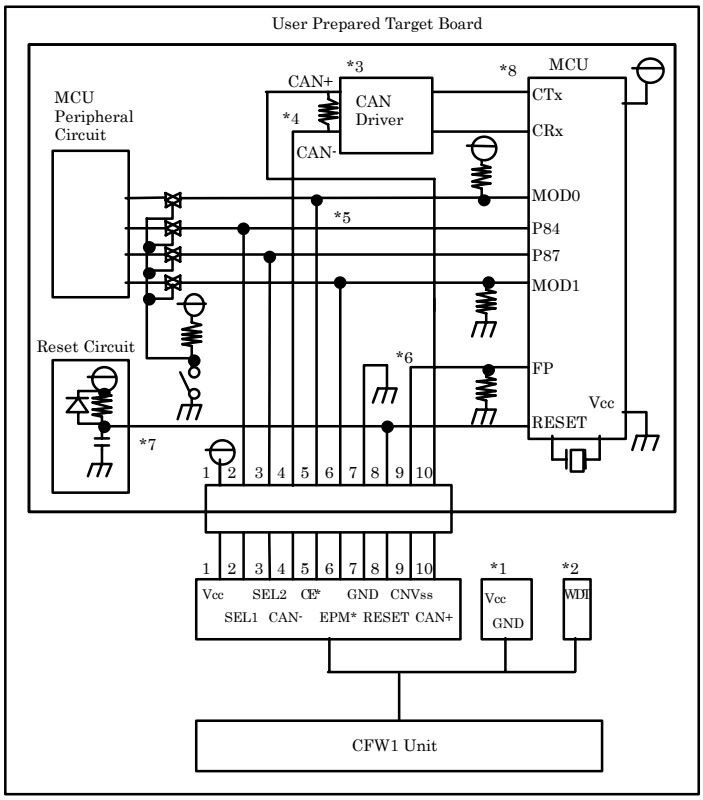
*6. Isolate CE and RP pins from the MCU peripheral circuit in case the jumper, analog switch, three state, etc. are built in, when onboard programming. Isolation can be omitted when those signal statuses are output from the MCU peripheral circuit. Resistance should be 4.7KΩ or over when pull-up is achieved to these signals. When pull-up is achieved to CE and RP pins, no connection to CE and RP of CFW1 is required and the isolation alone can be conducted. In case that these pins are not being used in the circuit, it is also possible to fix CE and RP pins to H and L levels directly on the board respectively.

*7. Connect the MCU CNVss pin to the CNVss pin of the CFW1 unit by achieving "pull up/down" with resistance of 10KΩ. In case that it is defined to H level by switching the jumper of the CNVss pin, no connection to the CNVss pin of CFW1 is not required.

*8. Connect the reset pin of the user target board MCU to the RESET pin of the CFW1 directly when the reset circuit of the user target board is "open collector output", "CR delay circuit", or constant current load circuit is less than dozens of μA.

*9. See "Renesas Microcomputer Hardware Manuals" for details of onboard programming (CAN Input Output Mode) of each device.

(6) M32R/ECU family



*1. The power connector can be connected or unconnected according to the conditions for CAN programming. (See "5. Instructions for Connection and Standalone Operation" for details of the power connector.)

*2. In case that a watch-dog signals are needed to start MCU, a probe for a watch-dog output also needs to be connected.

*3. Connect ISO11898 compliant CAN driver to CTx, CRx of MCU.

*4. Attach a terminating resistance to CAN+,− of the CAN bus.

*5. Isolate MOD0,MOD1,P84 and P87 pins from the MCU peripheral circuit in case the jumper, analog switch, three state, etc. are built in, when onboard programming. Isolation can be omitted when those signal statuses are output from the MCU peripheral circuit. Resistance should be 4.7KΩ or over when pull-up is achieved to these signals. When pull-up is achieved to MOD0, and pull-down is achieved to MOD1, P84, and P87, no connection to CE, EPM, SEL1 and SEL2 is required, and the isolation alone can be conducted. In case that these pins are not being used in the circuit, it is also possible to fix MOD0 to H level, and MOD1, P84, and P87 to L levels directly on the board respectively.

*6. Connect the MCU CNVss pin to the CNVss pin of the CFW1 unit by achieving "pull up/down" with resistance of 10KΩ. In case that it is defined to H level by switching the jumper of the CNVss pin, no connection to the CNVss pin of CFW1 is not required.

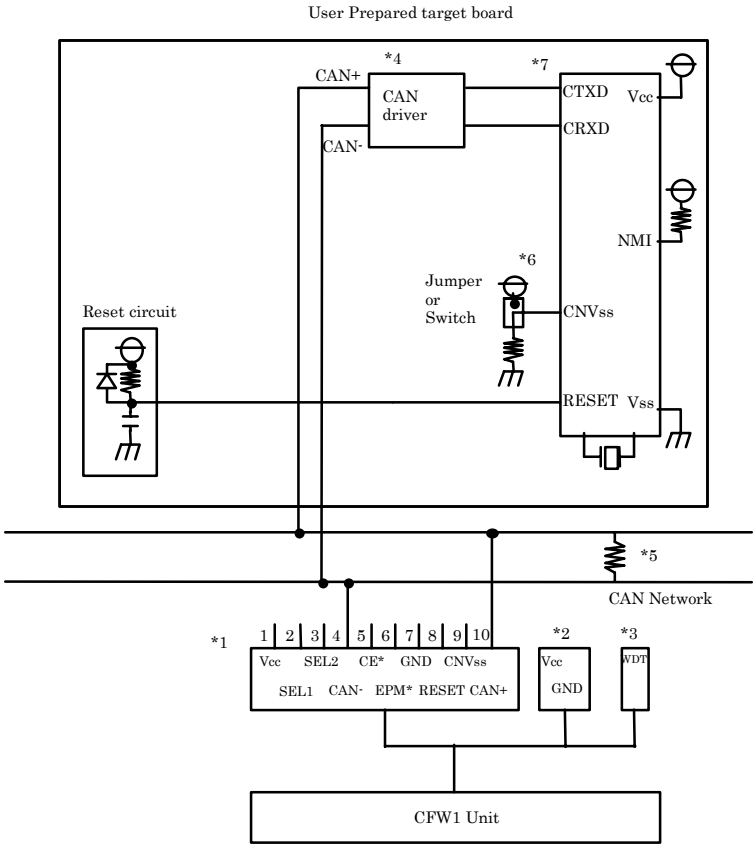
*7. Connect the reset pin of the user target board MCU to the RESET pin of the CFW1 directly when the reset circuit of the user target board is "open collector output", "CR delay circuit", or constant current load circuit is less than dozens of μA.

*8. See "Renesas Microcomputer Hardware Manuals" for details of onboard programming (CAN Input Output Mode) of each device.

7.2 Network Programming (CPU Rewriting Mode)

Circuit examples for network programming under user oriented MCU circuit design are shown below:

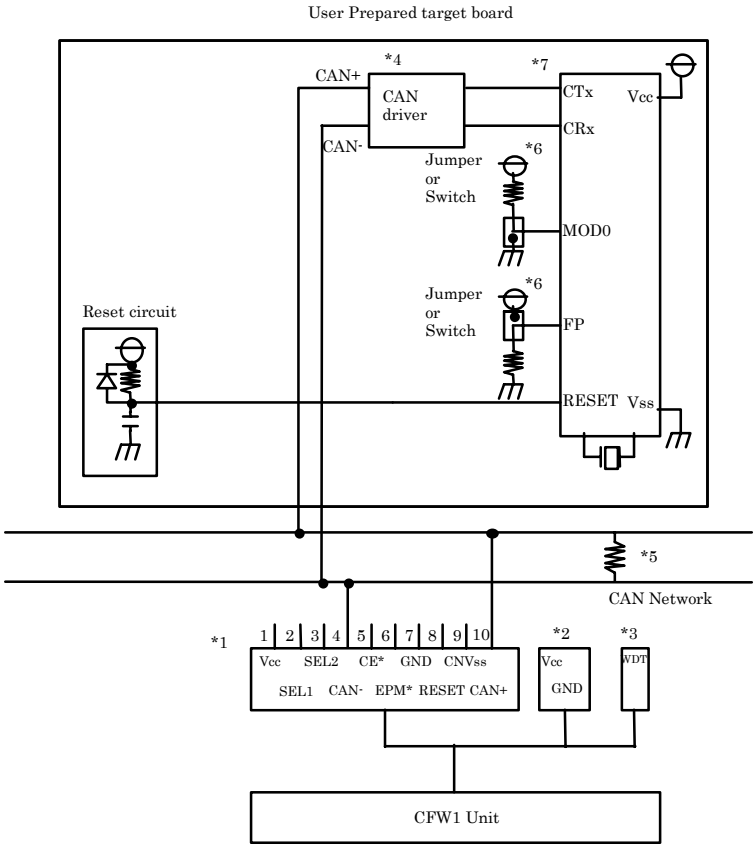
(1) M16C, M32C family



*1. Leave No.1, 2, 3, 5, 6, 7, 8, and 9 pins of the 10 pin connectors unconnected.
*2. The power connector can be connected or unconnected according to the conditions for CAN programming. (See "5. Instructions for Connection and Standalone Operation" for details of the power connector.)
*3. In case that watch-dog signals are needed to start MCU, a probe for a watch-dog output also needs to be connected. See "7.3 Connecting a Probe for a Watch-dog Timer" for a connecting method.
*4. Connect ISO11898 compliant CAN driver to CTXD, CRXD of MCU.
*5. Attach a terminating resistance to CAN+,– of the CAN bus.
*6. Disconnect the CNVss jumper when network programming. (CNVss="L")
*7. See "Renesas Microcomputer Hardware Manuals" and "Renesas CAN Flash Library Start Guide" for details of network programming (CPU Rewriting Mode) of each device and CAN flash library.

* It is necessary to mount a control program on user programs by referring to the sample of Renesas CAN Flash Library in order to achieve network programming. It is also necessary to set Send Frame in a control program of the CFW1. (See 2) CAN Setting [CAN] in "8.1 Main Programming Screens" for details of setting Send Frame.) Please contact "csc@renesas.com" for more information on CAN Flash Library.

(2) M32R/ECU family



*1. Leave No.1, 2, 3, 5, 6, 7, 8, and 9 pins of the 10 pin connectors unconnected.

*2. The power connector can be connected or unconnected according to the conditions for CAN programming. (See "5. Instructions for Connection and Standalone Operation" for details of the power connector.)

*3. In case that watch-dog signals are needed to start MCU, a probe for a watch-dog output also needs to be connected. See "7.3 Connecting a Probe for a Watch-dog Timer" for a connecting method.

*4. Connect ISO11898 compliant CAN driver to CTx, CRx of MCU.

*5. Attach a terminating resistance to CAN+,− of the CAN bus.

*6. Set FP="H" and MOD0="L" when network programming.

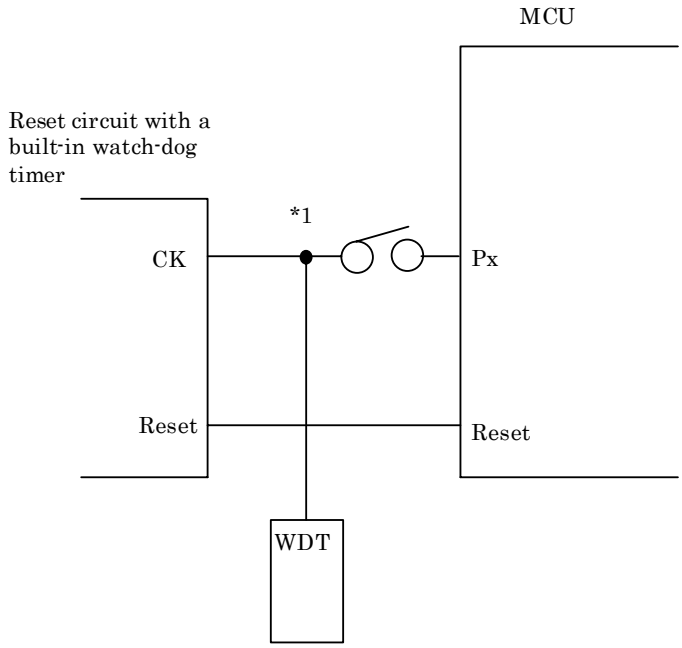
*7. See "Renesas Microcomputer User's Manuals" and "Renesas CAN Flash Library User's Manuals" for details of network programming (CPU Rewriting Mode) of each device and CAN flash library.

* It is necessary to mount a control program on user programs by referring to the sample of Renesas CAN Flash Library in order to achieve network programming. It is also necessary to set Send Frame in a control program of the CFW1. (See 2) CAN Setting [CAN] in "8.1 Main Programming Screens" for details of setting Send Frame.) Please contact "csc@renesas.com" for more information on CAN Flash Library.

7.3 Connecting a Probe for a Watch-dog Timer

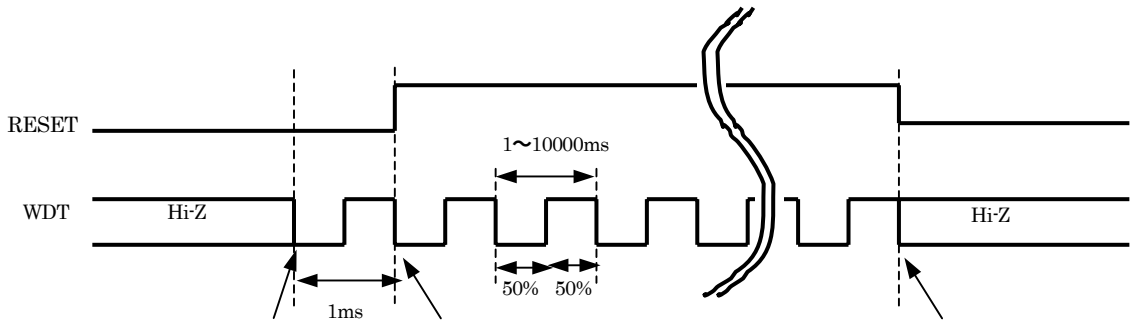
In case that a watch-dog timer circuit is mounted on a user prepared target board for CAN programming, it is possible to turn off the Reset of MCU even when CAN programming is being operated by using a probe for a watch-dog timer of the CAN programming cable. The output waveform of the probe can be set as the output waveform of 1ms – 1000ms in the control program of the CFW1. See 2) CAN Setting [CAN] in ““8.1 Main Programming Screens”.

Example of Connecting a probe for a watch-dog timer



*1. Isolate the output pin of the watch-dog timer from the MCU and input pin of the watch-dog timer in the reset circuit. Attach the probe for a watch-dog timer of the CAN programming cable to the input pin of the watch-dog timer.

Timing Chart of a Watch-dog Timer Output



CAN programming is start. Mode entry of CE, EPM, and

1ms after mode entry, Reset is canceled and CAN communication is started.

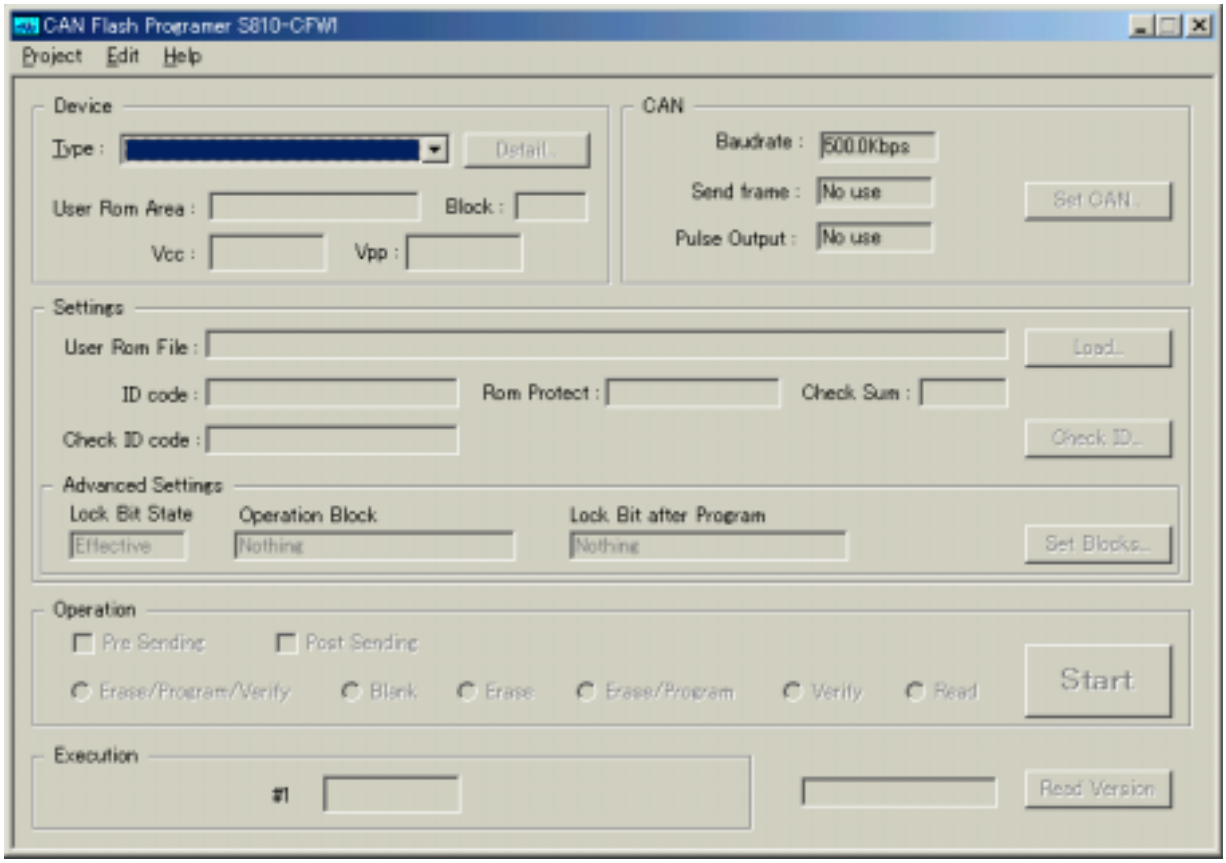
CAN programming is completed. WDT output stops when Reset is

8 Operation by PC Control

8.1 Main Programming Screens

Main programming screens are described as follows:

The following dialog appears when it is started.



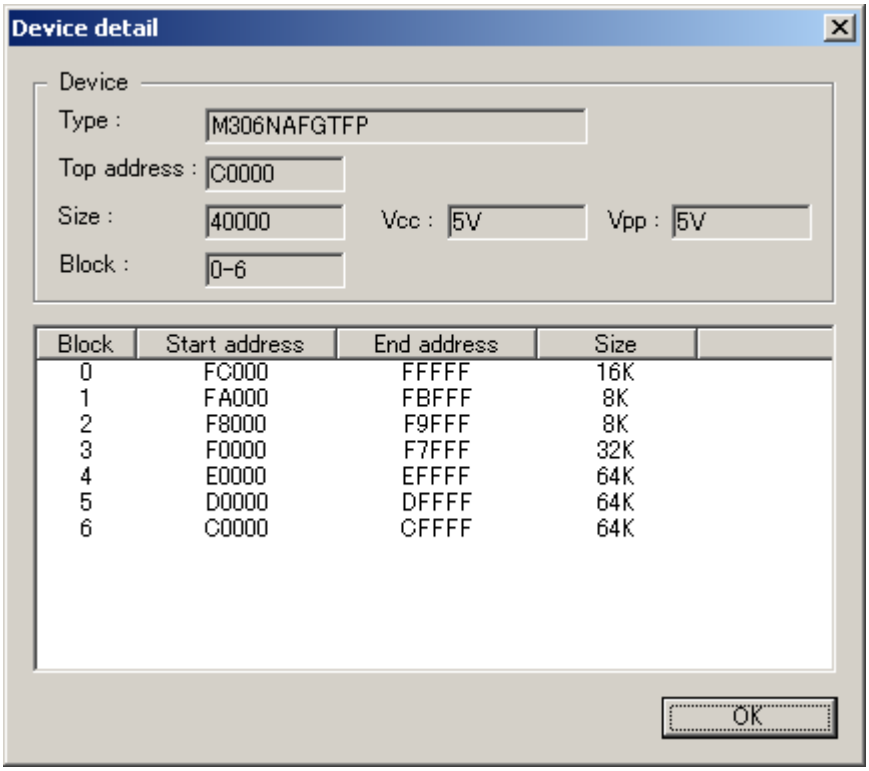
Device

1) Device Setting “Device”

Sets device. Device type can be selected by clicking the pull down button to display the device selection list.
The following device information will be displayed after setting.

User ROM Area	:	Address area of the user ROM
Block	:	Number of the user ROM blocks
Vcc	:	Power supply voltage
Vpp	:	Programming voltage

In addition, if you click [Detail], the following dialog will be displayed.
Detailed information on devices such as address value and block numbers will be shown. Click [OK] to close the dialog.

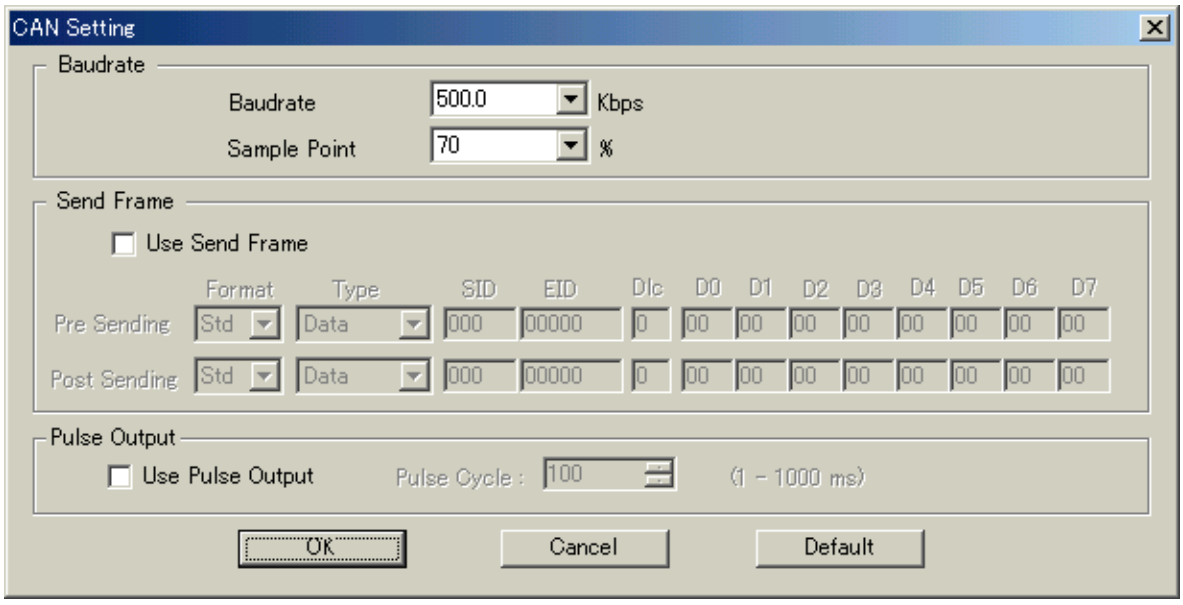


CAN

2) CAN Setting “CAN”

Sets CAN communication.

If you click [SET CAN…], the following dialog will be displayed and advanced setting will become available.



Baudrate : Sets a CAN communication speed.
Sets baudrate and sample points.

Send Frame : Checking Use Send Frame enables setting frames that are to be sent.
Pre Sending :Sends when flash programming is started.
Post Sending :Sends when flash programming is finished.
Note: When you use this function, refer to the Renesas CAN Flash Library. When you use this function, onboard programming (CAN Input Output Mode) cannot be operated. If you need to operate onboard programming, do not check the “Use Send Frame”.

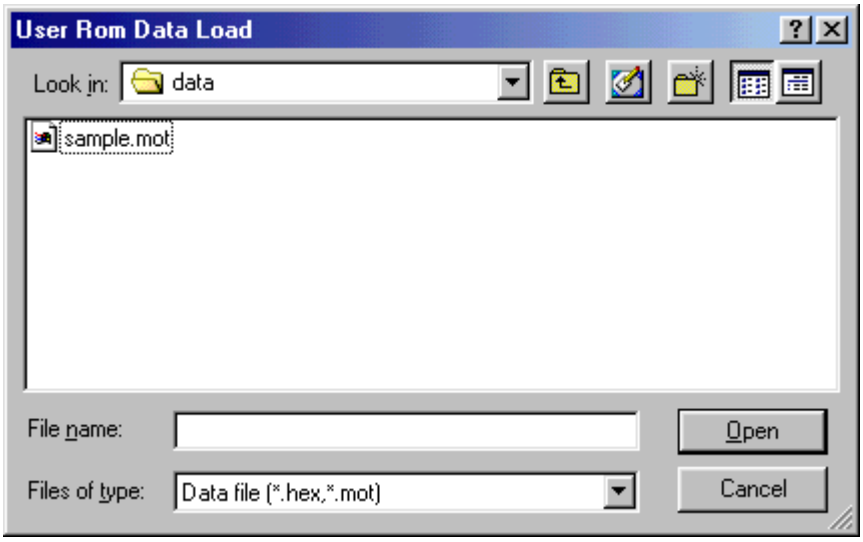
Pulse Output : Checking the “Use Pulse Output” enables pulse output to be used within a pulse length. It is also possible to set pulse length within the range of 1-1000ms.

By clicking [OK], you can close the dialog while keeping the current setting valid.
By clicking [Cancel], you can cancel the setting and close the dialog.
By clicking [Default], the setting will be displayed as a default.
Default setting : Baudrate : 500kbps
Sample Point : 70%
Send Frame, Pulse Output : (No Use)

Settings

3) Data Load to the User Rom Area "User Rom File"

A file list is displayed and data load to the User ROM Area (work memory) can be executed by clicking the [Load] button.
Note: Padding is achieved to the entire User Rom Area by 0FFH before data is loaded.



A loaded file name is displayed in the "User Rom File" dialog when data load is successful. ID number is displayed in the ID column.

●ROM Code Protect Check Function

The following messages are displayed when the ROM code protection, a protection from having ROM code read by a device, is set when loading data to the user ROM area. Click [OK] to execute loading or [Cancel] to cancel the operation.

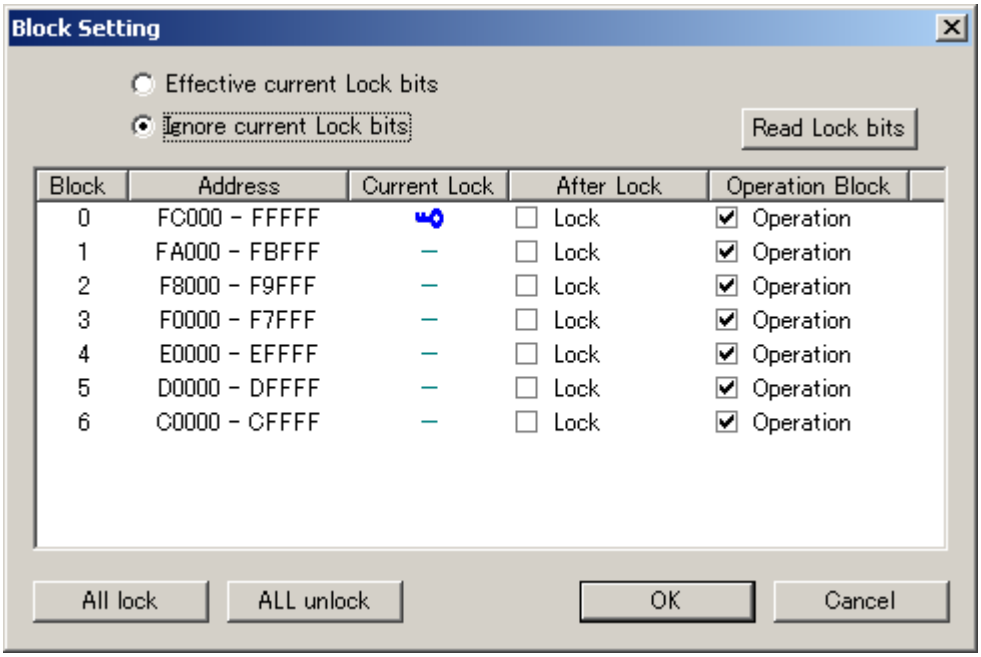
Level 1 enabled: ROM code protection is set to level 1
Level 2 enabled: ROM code protection is set to level 2
Enabled : ROM code protection is set
Removed : ROM code protection is released

●Checksum Display

Value of checksum for the entire user ROM area is displayed when data is loaded to the User ROM Area. The checksum is calculated as the low 2 bytes of the value that adds up data every 1 byte. Data on the address which is not in the file is added as "0FFH".

4) Advanced Setting “Advanced setting”

Operation such as programming a device as a block is available.
Setting lock bits in order to avoid having programmed data deleted or rewritten is also available. If you click the [Set Blocks], the following dialog will be displayed and advanced setting will become available.



Effective current Lock bits : Enables lock bit setting of programmed devices.
Executes each command targeting the unlocked blocks only, when executing E/P/V, ERASE, and E/P. This will keep the values in locked blocks as they were.
Select this option if you do not wish to program to locked blocks.

Ignore current Lock bits : Ignores the current lock bit setting. When each of the E/P/V, ERASE and E/P commands is executed, current locked status is ignored and each command will be executed. Note that after executing E/P/V, ERASE, and E/P commands with the Ignore Current Lock Bits setting, blocks will be unlocked, and set the after-locking if necessary.
Select this option if you wish to program to locked blocks.

If you click the [Read Lock bits] button, the current lock bit setting will be loaded.

Item	Description
Block	[Block Number] Block numbers are different depending on the device.
Address	[Address of Each Block] Addresses responding to each block are listed.
Current Lock	[Current State of Lock bits] : Locked — : Unlocked
After Lock	[Selecting Blocks to be Locked After Executing a Command] Locks blocks which are checked.
Operation Block	[Selecting Blocks for Operation] Executes a command targeting the blocks which are checked.

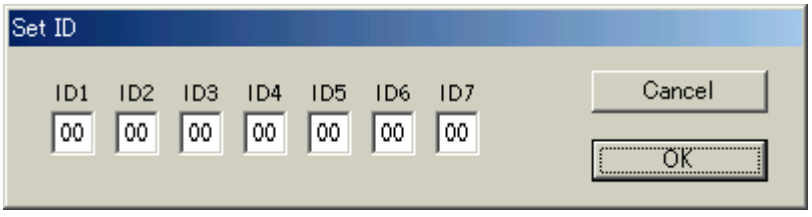
All lock, All unlock : Clicking [All lock] is to select all items for After Lock.
Clicking [All unlock] is to cancel all items of After Lock.

OK : Makes the setting effective and closes the dialog

Cancel : Cancels the setting and closes the dialog

5) ID Setting "Set ID"

ID setting for verification of a device ID can be defined.
The setting should be specified in a hexadecimal form. (See the following dialog.)



Specification of A to F is case-independence.

* ID of loaded data is displayed when data is loaded to the User ROM Area.

Operation

6) Operation [Operation]

Either operating or not operating Pre Sending and Post Sending should be selected.

The following 6 types of operations to a desired block of a device are available to be executed.

Erase/Program/Verify	:	Executes erase, program, and verify check functions in order.
Blank	:	Executes blank check function.
Erase	:	Executes erase function.
Erase/Program	:	Executes erase and program functions in order.
Verify	:	Executes verify check function.
Read	:	Loads data of a device to the memory of the main unit of CFW1.

Select one of the above operations then click the [Start] button to start execution.
If the Pre Sending is selected, frames that are set for Pre Sending are sent before executing the operation. If Post Sending is selected, frames that are set for Post Sending are sent after executing the action.

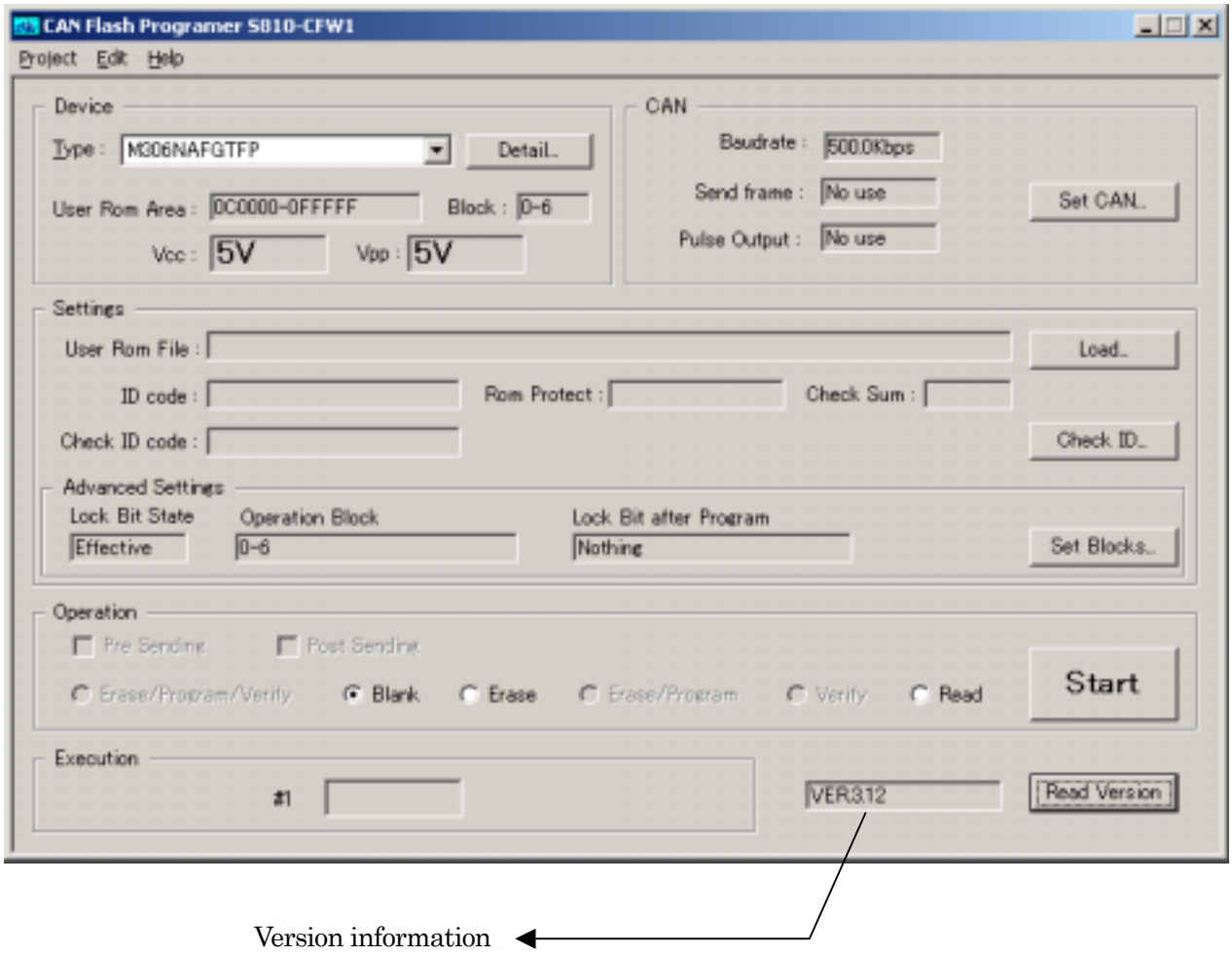
Results of operations are displayed in the result column [#1].

Pass	:	Operation completed successfully
Program Err	:	Program error
Erase Err	:	Erase error
Blank Err	:	Blank error
Read Err	:	Read error
Verify Err	:	Verification error
ID Err	:	ID verification error
Device Err	:	Device error

Results of operations are also displayed in the main unit of CFW1. See “8.5 List of LED Status” for detailed description.

7) Read Version

Device versions that are on a target board are displayed.
If you click [Read Version], the information of the version will be displayed.



Version information

8.2 Menu Bar

8.2.1 Project Menu

Contents of setting data that is to be programmed to a device can be saved (Save As) and loaded (Open) as project files in order to avoid human errors or the trouble of reset.

1) New

"Initializing" dialog is displayed by clicking [New] in the "Project" menu.
When initializing is completed, a new setting screen will appear.

2) Open

A file list of project files can be viewed by clicking the [Open] button in the "Project" menu. The extension of project files is (.CFP).

* Project files means files in which data that is defined by the CFW1 such as device type, data files, Operation Block, Lock Bit, and so on are saved.

3) Save As

A list of project files can be saved by clicking the [Save] button in the "Project" menu. The extension of a project file, (.CFP) can be omitted.

4) Exit

Terminates the control program. Before disconnecting the CFW1 from PC or turning off the power of the main unit of CFW1, terminate the program.

* Termination is required when programming all the data that has been defined by PC to the memory of the main unit of CFW1. The data is never deleted when the power is OFF since the data is stored in the memory of the main unit of CFW1.

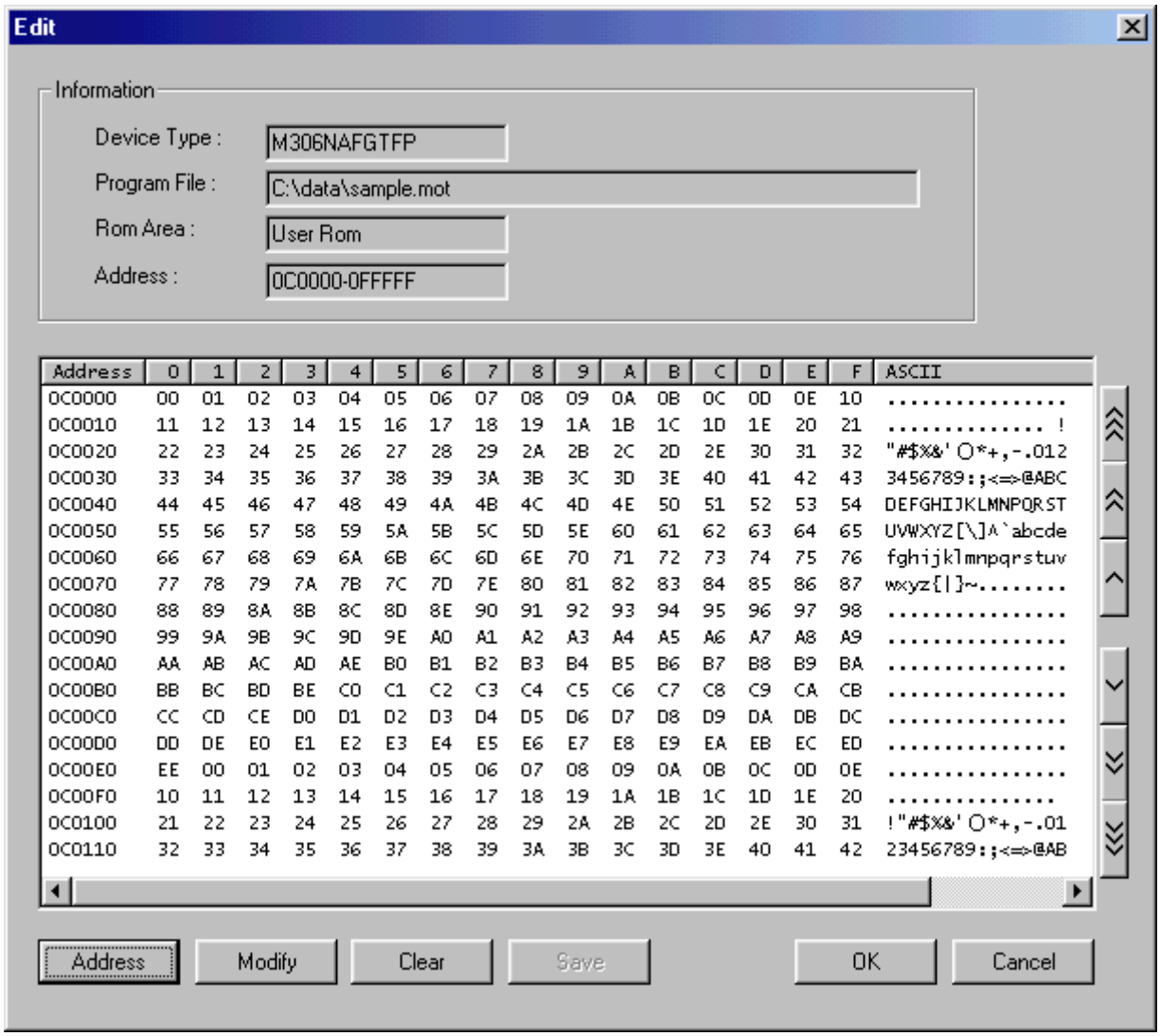
8.2.2 Edit Menu

Loaded data to the User Rom Area can be viewed and updated in the Edit Menu.

*** In case that data is loaded from a device (when [Action]-[Read] operation is executed), contents of the memory of the main unit of CFW1 can be loaded to a PC only when executing the first Edit. This is to match the contents of the work memory of the PC and the memory of the main unit of CFW1.**

1) User ROM Area

The edit dialog box of the User ROM Area is displayed. Data display, update, deletion of specific data, and data save to file can be achieved.



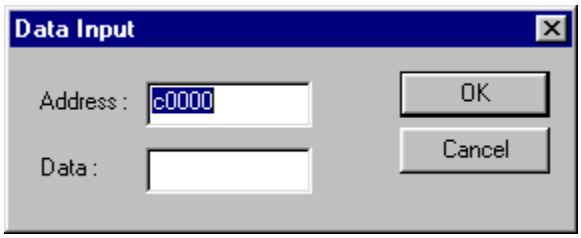
Memory dump addresses can be switched by clicking arrow buttons in the right hand side of the screen. Up-arrows reverse address numbers and down-arrows forward addresses. One-arrow buttons jump by ±100H, double-arrow buttons for ±1000H, and triple-arrow buttons for ±10000H.

1) [Address] Button

An address number that is to be dumped can be specified directly at the screen shown below by clicking the [Address] button.

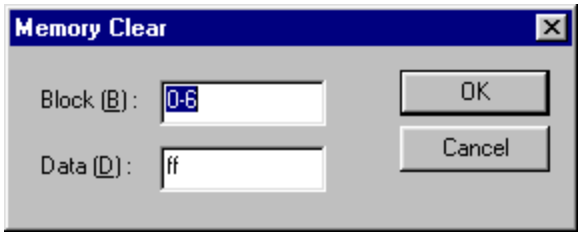
2) [Modify] Button

Data of a specified address can be modified at the screen shown below by clicking the [Modify] button.



3) [Clear] Button

Memory can be initialized by 0FFH by clicking the [Clear] button at the screen shown below.

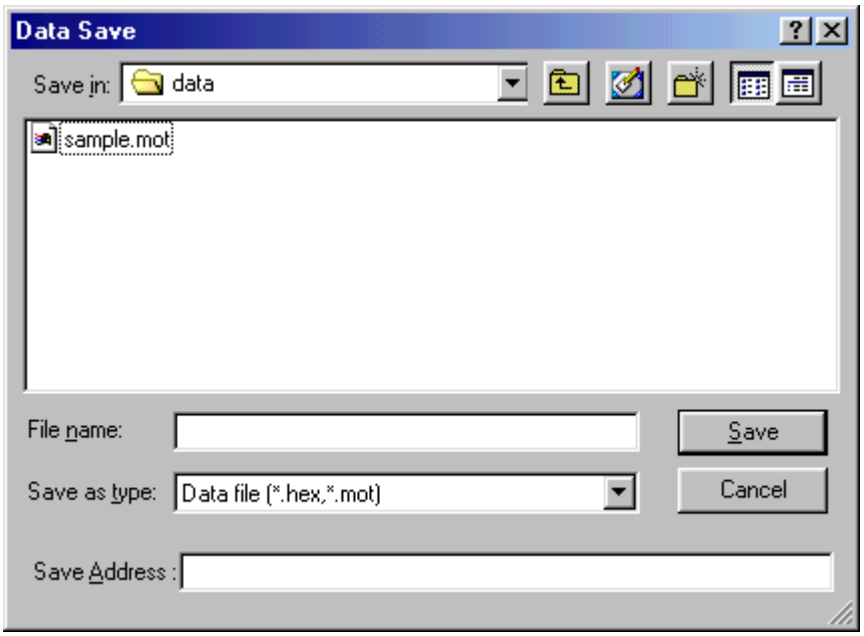


4) [Save] Button

Memory contents can be saved to files at the screen shown below by clicking the [Save] button. Both of the Intel HEX Format (.HEX) and the Motorola S Format (.MOT) file types are available by selecting the extension.

A range of data to be saved can be specified by hexadecimal in the [Save Address] entry column. Data of the entire area is to be saved if it is not specified.

Ex.) c0000-dffff : Range of C0000 - DFFFF is to be saved.
c0000-cffff,ff000-fffff : Range of C0000 - CFFFF and ff000 - fffff are to be saved.



5) [OK][Cancel]

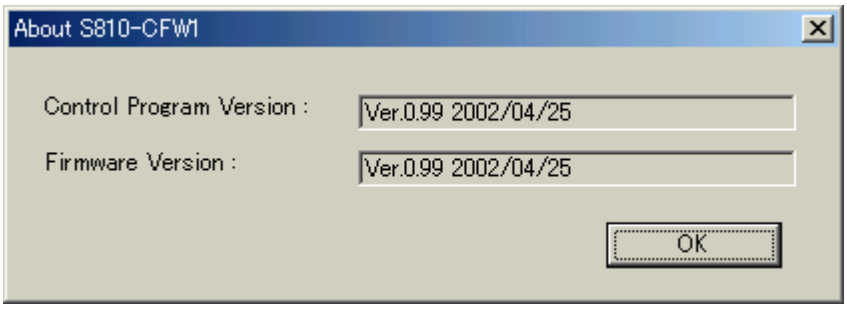
Exits the "Edit" screen, by clicking [OK] or [Cancel]. If the memory contents have been modified by [Modify] or [Clear], click [OK] to keep modification effective and [Cancel] to cancel it.

***Operating memory in the Edit screen is done only to the memory of the PC in order to save transfer time. Therefore, if you terminate it by clicking the [OK] button after making some modifications to the memory, the data of the PC will be loaded to the memory of the main unit of CFW1.**

8.2.3 Help Menu

1) About CFW1

Versions of the control program and the firmware of the main unit of CFW1 can be viewed.



- Control Program Version

  A version of the control program is displayed.

- Firmware Version

  A version of the programming control program for the main unit of CFW1 is displayed.

2) Manual

Operation manual of the CFW1 is displayed.

8.3 Error Messages

The following is a list of error messages.

Error Message	Error Cause	Solution
Checksum error.	Checksum error has been occurred.	Terminate the program and turn off the power of CFW1. Then, connect it again.
Command error.	Command error has been occurred.	Terminate the program and turn off the power of CFW1. Then, connect it again.
Command execution error.	Command execution error has been occurred.	Terminate the program and turn off the power of CFW1. Then, connect it again.
Communication error from S810-CFW1.	Communication from CFW1 failed.	Terminate the program and turn off the power of CFW1. Then, connect it again.
Communication error to S810-CFW1.	Communication to CFW1 failed.	Terminate the program and turn off the power of CFW1. Then, connect it again.
Communication error. Can't accept data from S810-CFW1.	Communication error with CFW1 has been occurred.	Check if the USB connecting cable is connected.
Device definition file 'cfw1type.tbl' format error.	Format of the device definition file is incorrect.	Reinstall the system of CFW1.
Different model.	Firmware is not programmed properly on CFW1.	Contact our technical support desk at (support@sunnygiken.co.jp).
External Flash ROM write error.	External flash ROM programming error has been occurred.	Terminate the program and turn off the power of CFW1. Then, connect it again.
File data is different.	Data difference is found between displayed file data and the one on the CFW1 unit.	Reload the file.
File format error.	Contents of the project file are damaged.	Check if you are selecting the right file.
File open error.	Access of displayed file failed.	Reload the file.
Firmware exec state error.	Firmware of CFW1 is not functioning properly.	Contact our technical support desk at (support@sunnygiken.co.jp).
Flash ROM write error.	Flash ROM write error has been occurred.	Terminate the program and turn off the power of CFW1. Then, connect it again.

Invalid ID number.	Invalid ID number has been specified.	Enter valid ID number.
Invalid initial load data.	Invalid initial load data has been returned.	Click [New] in the "Project" menu to initialize the CFW1.
Invalid address contained	Data file to be loaded contains invalid address.	Specify proper data file for the device.
Invalid address.	Invalid address has been entered.	Enter valid address.
Invalid block number.	Invalid block number has been specified.	Enter valid block number.
Invalid data.	Invalid data has been specified.	Enter valid data.
Memory has Changed! Do you want to save the file?	Contents of the memory have been changed. Do you want to save the file?	If you want to save the file, select [Yes], and if not, select [No].
Memory has Changed! Do you want to upload the memory?	Contents of the memory have been changed. Do you want to upload the memory?	If you want to upload it, select [Yes], and if not, select [No].
No device definition file 'cfw1type.tbl' found.	Device definition file does not exist.	Copy 'cfw1type.tbl' file to the same directory as that of the control program.
No firmware update file found.	Firmware update file cannot be found.	Reinstall the system of CFW1.
No operation block.	Operation blocks are not selected in the Block setting dialog.	Select operation blocks.
Oversized full path.	The selected size for a full path of a file is over 256 bytes.	Try to load files with the size that is within 256 bytes.
Please input hex one byte code.	ID number has not been entered properly in the Set ID dialog.	Input hexadecimal one byte code.
Read user file error.	Reading the user file failed.	Read the user file again.
S810-CFW1 already started.	S810-CFW1 has been tried to start although it has already started.	Activate the control program that has been already started.
S810-CFW1 is disconnected. Program will now terminate.	CFW1 is disconnected. The program will terminate.	Connect CFW1 again and execute the program.
S810-CFW1 project file format error.	Contents of CFW1 project file are damaged.	Save the project file again.
System memory error.	Irregular memory contents are found in the CFW1 unit.	Click [New] in the "Project" menu to initialize CFW1.
This file includes data addressing non-ROM area of the selected device. Do you want to continue?	The file includes data addressing non-ROM area of the device that is being selected.	If you want to continue, select [Yes], and if not, select [No].
Would you like to update firmware?	The version of the firmware does not match CFW1.	If you want to update the firmware, select [Yes], and if not, select [No].

9 List of LED Status

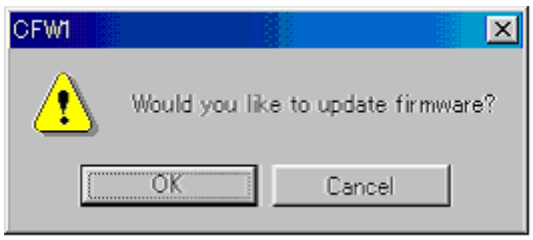
LED status is listed as follows:

State	Conditioning	LED Status
Power on	When setting is achieved by PC	POWER is on and LED of the command that is set and saved by the main unit of CFW1 for the last time is on. (POWER is always on while the main unit of CFW1 is being supplied with power.)
	When setting by PC is not achieved	POWER is on.
Each command is executed.	Under execution	PASS blinks. Also, Tx, Rx are on while CAN communication is being operated
	When passing	PASS is on
	When failing	FAIL is on
	When ID error is occurred	ID ERR is on
Initializing is executed.	When [Project] , then [New] in the menu of the control program are selected	PASS blinks
CFW1 is malfunctioned.	When system memory of the CFW1 is malfunctioned	FAIL blinks
Waiting for updating	When turned on while START switch is being pressed	Each LED of PASS, ID Err, FAIL is on.

10 Updating Firmware

Checking firmware versions of the main unit of CFW1 is available. If the version is not supported by the current control program, it can be automatically updated.

The following dialog will be displayed. Then, click [OK].



If you turn it on while pressing START switch of the main unit of CFW1, it will achieve waiting state for updating firmware. While it is in the waiting state, if you start the control program of the CFW1, updating firmware will be executed.

Revision	Descriptions	Revised Date
Rev.B	Due to the transfer of the Mitsubishi Electric Semiconductor section to Renesas Technology, all the descriptions with "Mitsubishi" were changed to "Renesas" or "Renesas Technology".	May/07/2003
	7.1 Onboard Programming An example diagram of M32R/ECU family connection circuit has been added due to the compliance with the M32R/ECU.	
	7.1 Onboard Programming An example diagram of M16C/1N series has been added.	
Rev.B2	7.2 Network Programming Circuit examples for network programming have been added due to the compliance with the M32R/ECU.	Dec/12/2003
Rev.C	7.1 Onboard Programming The example diagram of M16C/6N and M32C/85 group connection circuit has been separated into two: an example diagram of M16C/6N4, 6N5, 6NS group connection circuit and an example diagram of M32C84, 85 group connection circuit. The example diagram of M16C/1N group connection circuit has been partially modified. An example diagram of M16C/29 group connection circuit has been added.	Nov/5/2004
Rev.D	7.1 Onboard Programming An example diagram of M16C/6NK, 6NL, 6NM and 6NN series have been added. Notes of a connection circuit has been partially modified. 7.2 Network Programming Notes of a connection circuit has been partially modified.	Aug/1/2005

Overseas Specifications

- Obtaining the CE Mark: (EMI: EN55011 Group1 Class A, EMS: EN61000-6-2

- FCC Compliance:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions;
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAN Flash Microcomputer Programmer (S810-CFW1) Operation Manual Rev. D

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